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DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Interagency Report USGS - 210

ENVIRONMENTAL APPLICATION OF REMOTE SENSING METHODS
TO COASTAL ZONE LAND USE AND MARINE
RESOURCE MANAGEMENT

THE POTENTIAL OF
REMOTE SENSING AS A DATA BASE
FOR STATE AGENCIES:

THE VIRGINIA MODEL

by

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CASE FILE
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INTRODUCTION

The stresses imposed by man's culture on environmental systems are perhaps nowhere so acute as in coastal megopolis where the shock of urbanization, virtually unmanaged, barely understood, and scarcely forecast, has been in most instances nearly fatal. If society is to survive, resource utilization must be optimized and environmental degradation checked. This will require a re-evaluation of the entire social/biophysical ecosystem. At the heart of this system at all levels of government are the decision-makers charged with the responsibility for evaluating, planning, regulating, and enforcing resource use and allocation.

In the past, the exercise of these responsibilities has often been based on information derived from extrapolation of historical patterns of resource use and from forecasts of short-term economic gain, but with minimal realization for long-term social cost. A society which shows a growing concern has increasingly forced governmental action which will require the preservation and improvement of environmental quality at the same time as man's culture expands.

In as much as all cultural activity has environmental impact, the requirements for environmental analysis, prediction and planning have exponentially increased. New levels of environmental monitoring are

required in terms of geometric scale and temporal sampling. Remote sensing could offer an environmental overview heretofore not available and a potential data base for planning and decision-making presently unparalleled--provided it could be made available in an easily interpretable form on a competitive cost/effective basis to agencies at all levels of government.

This paper is the report of a study into the structure of the governmental hierarchy of the Commonwealth of Virginia as it is organized to carry out its responsibilities. The investigation included the following:

- 1) The present data used in the function of each agency, the method of its collection and dissemination, and the rationale for its use in decision-making.
- 2) The potential impact of remote-sensing as an alternative or supplemental data base in the function of these agencies. Included is an evaluation of required imagery and resolution and sensory frequency.

METHODOLOGY

An investigation into the dimensions of decision-making generally follow one of two research strategies:

- 1) A comparison of an existing describable decision system with some structured, hypothetical model of decision-making;
- 2) An analysis and description of decision-making in a previously unevaluated system.

The first termed the "rational model" approach entails the formulation of a detailed conceptual model of the decision process including the flow of all information that should be considered, as well as the structure of institutional and legal relationships essential to it. Field investigation then attempts to determine the degree of conformance to model, significant patterns of variation from the model and the reasons for this variation. This approach assumes an a priori understanding of the specific relevant decisional activities as well as a substantial knowledge of the technical and informational elements appropriate to each operation.

The second strategy, oriented more toward exploration of existing decision processes, presumes substantially less understanding of detailed inter-relationships in a given area of activity, and is in fact oriented to the development of some of the insights necessary to develop a rational construct. The basic element of this approach is the field interview, guided by a more or less open-ended questionnaire

designed to establish the boundaries of activity and concern, the specific elements of information and decision models utilized and relevant inter-institutional and legal inter-relationships.

Given the exploratory nature of the present study and the lack of familiarity of the research staff with the intricacies of the governmental process in Virginia, the second general approach was selected, although as the investigation proceeded, it was necessary to modify it toward the first strategy for the investigation of the regional and local level of governmental.

SOURCES OF DATA

Approach to State Government:

In an effort to establish a basic direction for inquiry at the state level, the staff made an initial appraisal of the structure of state government from the aspect of the distribution of decisional responsibility and functional activity. From an analysis of the state organization chart (Appendix A) and the summary of the program descriptions published by the state*, it appeared that substantial overlaps existed between agencies with regard to functional activity especially with respect to forecasting and planning functions. This prompted the early conclusion that any a priori selection of agencies which appeared to have a high potential for application of remote sensing technology would be difficult. Indeed, such selection might result in overlooking agencies wherein remote sensing applications might be high even though not evident from their published program information. Therefore, it was determined to develop information on a broad array of agencies and programs based on the assumption that a representative sample of the types and forms of data employed by the state would develop. This would then provide a basis for appraising the diverse types of information required by state agencies generally, as well as the specific applicability of remote sensing technology.

A standard questionnaire form and instructions were developed for use by field interviewers (Appendix B). This form was intended to address specific aspects of agency operation, yet provide opportunity for

*Virginia Catalog of State Services (Richmond: State of Virginia, Division of State Planning and Community Affairs, 1969).

an official to expand upon other general items. Agency representatives were contacted by telephone in order to verify the initial program compilation and to determine their willingness to be interviewed. Thereafter, members of the staff conducted personal interviews. Demonstration kits consisting of aerial photographs, black/white and color infrared, which comprised a cone of resolution over Norfolk, Virginia, were used in interviews with those agency representatives not familiar with remote sensing.

Photograph scales were as follows:

<u>Photo Scale</u>	<u>Type</u>
1:120,000	Color IR
1: 60,000	Color IR
1: 36,000	B/W
1: 30,000	B/W
1: 20,000	B/W
1: 10,000	B/W

Approach to Regional Agencies

Stimulated by the requirements of Bureau of the Budget Circular A-95, the State of Virginia has promoted the establishment of 22 regional planning districts which encompass the entire state (Appendix F). Designated as the Regional Review Agencies, the program-review responsibilities of the regional planning districts are expected to have significant impact on the direction and quality of regional development. Therefore, a decision was made to determine, through field interviews based on the standard questionnaire, the decisional processes and information requirements of the districts as a basis for appraising the potential application of remote sensing technology.

Although these districts were created administratively in 1969, a number are still not organized; few are fully operational. However, given their planning charge and the specific programs to be reviewed under the 1969 Federal Bureau of the Budget circular A-95 dealing with evaluation, review, and coordination of federal assistance programs and projects, it was possible to create a standard or expected planning program for a typical district. Interviews of those districts which are now operational provided additional information on other types of programs which are being undertaken in response to local needs. Based on these interviews and on the survey of regional planning data requirements undertaken by the Virginia Division of State Planning and Community Affairs in 1969, a data base for district programs was identified and evaluated for potential remote sensing applications.

Approach to Local Agencies

The vast array of local government jurisdictions, combined with a limited research staff and resources, precluded the use of personal interviews to determine local government information needs and applications. During 1969-70 the Virginia Division of State Planning and Community Affairs had conducted a comprehensive survey of local government activities and information requirements. Although the original purpose of this survey related to the potential development of state-wide computerized information system and central data bank, the information collected was considered adequate for the development of a profile or model of local government

information needs and uses based upon actual applications. Unlike the survey of state and regional data needs and decision making processes, the local survey could not precisely specify the role of data in the making of actual decisions. However, it did indicate a state-wide demand for certain broad types of data, some of which are rated as having a high potential for remote sensing application.

FINDINGS

State Agencies

Interviews were conducted with representatives of 19 agencies of the Commonwealth of Virginia and information was collected on 51 programs (Appendix C). The responses from agencies varied significantly in their level of sophistication. In some instances it was readily apparent that significant items of information had been either ignored by the respondent, or that the interviewer had failed to record the information. However, since the objective of the investigation was to determine those items of information actually employed in the decision process, no effort was made to correct the field data or to impute information uses to the agency. It was considered that such a procedure would bias the findings, if at all, in a conservative fashion, rather than to provide an inflated final conclusion. At the same time, it was assumed that because of the functional diversity that exists within agencies all relevant items of information would be identified even though a specific item might have been missed in any given interview or agency.

Analysis of the interview results yielded an array of 206 data categories or items (with some variation in degree of specificity) employed in the decision processes related to the 51 programs. Generally, the sample both of programs and data items reflects a maritime orientation within the Commonwealth. On the whole, state agencies are more directed

toward regulation/registration or planning/review than to the delivery of services (Appendix D). The array of data items is felt to be substantially representative of the types and forms of data employed throughout state government, and thereby affords a basis for appraisal of the general application of remote sensing technology to the decision process at the state level. Each of the 206 items was evaluated in terms of the potential application of one or more of six categories of current remote sensing technology:

Aerial photography - black and white
Aerial photography - color
Aerial photography - color I/R
Aerial photography - thermal I/R
ERTS satellite photography
Airborn Radar

Of these, 55 items were deemed to be susceptible in some fashion to remote sensing technology (Appendix D) and is currently employed in the operational activities of the agencies. If remote sensing is to make a meaningful contribution to the decision process, then the information derived from remote sensing must have the potential for either supplementing information currently used, or as a substitute for the current source of that information. The 55 items were analyzed in terms of the current sources of information as well as for the potential of remote sensing to supplement and/or substitute for the current source in either a more meaningful and/or a more economic manner (Appendix E).

These items rated as having a high remote sensing application potential are as follows:

- Type and acreage of crops and vegetation
- Soil types and distribution
- Flood plain data
- Stream profiles
- Effluent discharge locations
- Effluent characteristics
- Shellfish stock locations
- Potential shellfish growing areas
- Location and dimensions of watersheds,
watercourses, and flood plains
- Location of piers, docks and pipelines
- Water temperature
- Location of scenic river sites
- Turbidity of water
- Erosion rates--by type of land use
- Location of areas proposed for dredging

Although the present state of the art in remote sensing offers little to many agencies concerned with the quality and biological content of water resources, the demand for this type of information and the present relatively high data-gathering costs would seem to support research activities directed at improving the remote sensing potential in this area.

Regional Activities

Two primary activities of Virginia's 22 Regional Planning Districts are to prepare plans for their respective areas and to review proposed federal, state, and local projects and programs for the region in order to maintain consistency with local goals and planned development (Appendix F).

These programs heavily accent social environmental issues including planning for economic development (Appendix G, H). The distribution of

federal and state funds to support regional planning has also been weighted in this direction. Thus, it is not surprising that the current programs of operating districts are most concerned with regional economic development and land use, law enforcement, and health care planning. Each encompasses programs well funded at the Federal level, for which alternative federal, state, or local agencies with experience in these fields already existed or for which the role of local participation was being evaluated.

In addition, a number of currently operational planning districts have taken on secondary functions involving the actual physical planning and construction of various facilities and utility systems.

The data items used by these districts in their planning reflect their program concerns (Appendix I). Of the 71 data items surveyed, there are only a few which concern the physical environment. As at the state level there are clear remote sensing applications to flood plain and open space recreational site characteristics; to the evaluation of specific topographic characteristics for engineering designs, including utility line planning and water usage; and to the identification of solid waste disposal areas and sources and distribution of air and water pollutants.

The Regional Planning Districts have been given the responsibility for providing annual updated information for the continuing transportation planning of the Virginia Department of Highways. Thus, these remote sensing applications useful to the state Department of Highways are equally

useful here. In addition, there are clear applications in the rapid updating of subdivision and housing changes within each region. For the data relating to socio-economic characteristics of the population, few applications are apparent.

The scale of resolution deemed most useful reflects the need to monitor changes in the quantity and quality of housing and other structures. The next most useful scale reflects the need to monitor changes in gross land use classifications and transportation patterns both within a given region and in adjacent regions. Little use would be found for lower levels of resolution.

Local Agencies

Analysis of the data used and desired by the 81 counties, cities and towns surveyed by the Division of State Planning, revealed 53 general categories of data used in the broad program areas of general administration, planning, education, finance, and police (Appendix I). Of these data items, 53 separate categories, 7 were judged as having a high application potential for black and white remote sensing. They are these:

- Business establishments by type
- Number of automobiles
- Traffic counts
- Building demolitions
- Mobile homes
- Land use by type
- Boat counts

Because of its initial focus, that of determining data processing needs, the survey did not distinguish individual data bit requirements for

each broad program. Also, it did not reveal the decision-making process or the influence that each type of data had in the process. In spite of these shortcomings, three interesting factors emerged.

First, local agencies desire a broadly based data system that is updated on a regular basis. One question on the survey asked respondents to indicate the types of data currently needed, but not being provided. Almost all of the listed choices had a "high demand" response, even where the locality was presently collecting the data on its own or receiving it from some central source. The major problem seemed to be that of accurate data. This was especially true for the land use categories, which carry a high application remote sensing rating.

Second, for several important categories of data, some not included in the survey, localities rely heavily upon central data-collecting and dissemination agencies such as the U. S. Bureau of the Census, the Virginia Division of State Planning, the Virginia Employment Commission, the Virginia Game and Fish Division, the Virginia Department of Health, and the Virginia Department of Highways. Thus, those high application categories of data listed for these agencies in the state and regional agency discussions will be heavily utilized by most of the local governments, thereby increasing the use-potential factor for almost any remote sensing data supplied to state agencies and its sub-regions.

Third, many local governments indicated that for certain types of data which seem at first glance to be peculiar to the individual local agency (i.e. community land use) similar information on an updated basis for other communities was also desired. This was especially true for neighboring jurisdictions. Effort directed toward providing data of this

type, even where it might initially seem to be of limited geographical application, will not result in a specialized low volume use. Thus, objections to collecting this data through remote sensing techniques based upon limited application do not seem to be of much validity.

Local agencies, especially planning and review agencies, will use almost any data applicable to their jurisdictions and their neighbors. Seemingly, the next step is to determine the priorities of local agency needs for data, comparing those needs to those items having a high-application remote sensing potential, determining the willingness of local government to subsidize at least part of the cost of collecting and interpreting the data, and finally, engaging in a cost analysis of developing a remote sensing capability for local agencies. If followed, this should result in an objective evaluation of the application of remote sensing to local agency data needs.

DISCUSSION

In some measure, the modi operandi of government has evolved from the data base that has been available to it. These data are largely quantitative and are supplied through registration, licensing, permits, certification, tax rolls, census data, etc. Thus, few agencies or bureaus exist which presently have the ability to translate remote sensing imagery into data that is either comparable with or complementary to the data now used for regulation.

While it is obvious from this study that remote sensing can play a significant role as a data base, especially in an inventory and planning role, its utilization will require either that each user become technically competent in interpretation or that a central bureau or data bank be established to translate imagery into effective data. Generally, the technical sophistication of an agency is directly proportional to its level in the government hierarchy so that the broadest potential user, local government, has the least capability of utility.

National concern about environmental quality has resulted both in federal legislation to protect the environment (National Environmental Policy Act of 1969) and in the reorganization of federal agencies in order to move effectively regulate and manage it. However, few states including the Commonwealth of Virginia, have yet responded to the federal leadership for environmental regulation. Further, there is no agency at either federal or state level which is charged with or responsible for

environmental overview. Yet, it is acknowledged that every decision made or action undertaken by any agency or bureau has environmental implications, even to the lowering of the Federal Reserve interest rate. Therefore, it would seem inevitable that there will eventually be enacted enabling legislation for environmental assessment and management.

The most unique characteristic of remote sensing lies in the large scale overview it provides of earth's surface. Therefore, one of the largest potential uses of remote sensing could be to monitor the status and study the dynamics of environmental systems. Both requirements will be necessary to effective resource allocation and environmental management.

CONCLUSIONS

- (1) Remote sensing does appear to offer a unique source of data which will supplement, complement, and be more current than some of the data now collected and used by government agencies, provided the data can be supplied in formats compatible with the existing decision-making process.
- (2) The applications of remote sensing appear to be highest in the inventory function of government, i.e. what is there and what is its quality. This is the initial focus of agency planning. The second highest application revolves about the regulation function of government.
- (3) Those agencies which have the highest potential application for remote sensing data are:
 - a. Natural Resources & Economic Development
 - b. Recreation & Culture
 - c. Agriculture
 - d. Transportation
 - e. State Planning
 - f. Regional Planning Districts
 - g. Local City & County Planning Agencies
- (4) In as much as few agencies presently have the capability of interpreting remote sensing imagery, little use will be made of it unless a central processing center is created for data interpretation, generation and dissemination.
- (5) The scales of resolution that appear to be necessary require sensing at several altitudes and/or lens lengths and at frequencies which

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for some needs are repetitive as often as hourly but which for many applications are quarterly and for inventory annually.

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APPENDIX A

Organization of the Virginia State Government

APPENDIX A

ORGANIZATION OF THE VIRGINIA STATE GOVERNMENT

Compiled by Research Section, Division of State Planning
and Community Affairs, State of Virginia, December 1969.

* Agencies surveyed by Coastal Zone Research Project, Summer 1970

I JUDICIAL

- A Attorney General
- B Supreme Court of Appeals

II EXECUTIVE (Governor -- Lieutenant Governor)

A Education

- 1 Public Education and Special Schools
 - a) State Board of Education
 - b) Virginia School at Hampton
 - c) Virginia School for the Deaf and Blind at Staunton
- 2 Higher Education
 - a) State Council of Higher Education for Virginia
 - b) Department of Community Colleges
 - c) Virginia State College at Petersburg
 - d) Norfolk State College at Norfolk
 - e) Longwood College at Farmville
 - f) Madison College at Harrisonburg
 - g) Radford College at Radford
 - h) The College of William and Mary in Virginia
 - i) University of Virginia at Charlottesville
 - j) Virginia Commonwealth University at Richmond
 - k) Old Dominion University at Norfolk
 - l) Virginia Polytechnic Institute at Blacksburg
 - m) Virginia Military Institute at Lexington
 - n) State Education Assistance Authority
 - o) Virginia College Building Authority
 - p) Virginia Commission on Higher Education Facilities

- 3 Related Educational Functions
Virginia State Library

B Health, Welfare, and Corrections

- 1 Health

- * a) Department of Health -- State Board of Health
- b) Department of Mental Hygiene and Hospitals

- 2 Welfare and Corrections
 - a) Department of Welfare and Institutions
 - b) Virginia Board of Vocational Rehabilitation
 - c) Virginia Commission for the Visually Handicapped
 - d) Virginia Commission for Children and Youth
 - e) Virginia Commission on the Aging

C Administration and Finance

- 1 Governor's Office
 - a) Office of Administration
 - (1) Division of the Budget
 - (2) Division of Engineering and Buildings
 - (3) Division of Personnel
 - (4) Division of State Planning and Community Affairs
 - (5) Highway Safety Division
 - (6) Division of Automated Data Processing
 - b) Division of Industrial Development
- 2 Fiscal
 - a) Department of Taxation
 - b) Department of the Treasury
 - c) Treasury Board
 - d) Department of Accounts
 - e) State Commission on Local Debt
 - f) Department of Property Records and Insurance
 - g) Virginia Supplemental Retirement System
 - h) Department of Purchases and Supply
- 3 Miscellaneous
 - a) Department of Military Affairs
 - b) Virginia Commission on Interstate Cooperation
 - c) Virginia Alcoholic Beverage Control

D Natural Resources, Economic Development, Recreation and Culture

- 1 Natural Resources and Economic Development
 - * a) Department of Conservation and Economic Development
 - * b) State Water Control Board
 - * c) Commission of Game and Inland Fisheries
 - * d) Virginia Institute of Marine Science
 - * e) Virginia Soil and Water Conservation Commission
 - * f) Air Pollution Control Board
 - * g) Potomac River Fisheries Commission
 - * h) Potomac River Basin Commission of Virginia
 - * i) Atlantic Marine States Fisheries Commission
 - * j) Ohio River Valley Water Sanitation Board
 - * k) Virginia State Ports Authority

- 2 Recreation and Culture
 - * a) Virginia Historic Landmark Commission
 - * b) Commission of Outdoor Recreation
 - c) Jamestown Foundation
 - d) Gunston Hall

- e) Art Commission
- f) Virginia World War II Memorial Commission
- g) Commission on Arts and Humanities
- h) Virginia Independence Bicentennial Commission
- i) Virginia Museum of Fine Arts

E Agriculture

- 1 Regulatory
 - * a) Department of Agriculture and Commerce
 - * b) Milk Commission
- 2 Promotional
 - * a) Commission of the Industry of Agriculture
 - b) Other promotional commissions
- 3 Research
 - a) Virginia Truck Experiment Station

F Manpower and Industry

- 1 Service
 - a) Department of Labor and Industry
 - b) Virginia Employment Commission
- 2 Regulatory
 - a) Department of Professional and Occupational Registration
 - * b) State Corporation Commission
 - c) Department of Workman's Compensation

G Transportation and Related Functions

- 1 Planning and Construction
 - * a) Department of Highways -- State Highway Commission
 - b) Virginia Airports Authority
 - c) Washington Metropolitan Area Transit Commission
- 2 Regulatory
 - * a) Division of Motor Vehicles
 - b) Department of State Police

III LEGISLATIVE

A General Assembly of Virginia

- 1 Senate
- 2 House of Delegates

B Supporting Legislative Agencies

APPENDIX B

Data Inventory Questionnaire

APPENDIX B

QUESTIONNAIRE USED IN SURVEY OF AGENCY DATA USED

University of Virginia
Department of Environmental Sciences
Coastal Zone Research Project

Instructions for Data Inventory Questionnaire

General: The purpose of this questionnaire is to collect basic information about the programs and activities of selected governmental agencies. These data will be used to evaluate the potential utility of remote sensing based information for agency purposes. Insight is sought into the following categories of information:

1. the program activities of the agency;
2. the objectives or goals sought by each program activity;
3. the subject matter and specific categorical content of three basic levels of program decision -- i.e., long-range planning/investment; short-range planning/investment; operation-regulation-coordination;
4. the specific types of data (as well as the form of the data, accuracy, and source) employed at each level of decision for each program activity;
5. the type and content of decision models employed in the decision/operation process of each program activity;
6. where program operation results in the generation of

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periodic reports or compilations of data, identification of the recipients of such reports, etc.

The following paragraphs outline the specific items of information to be reported for each line item of the questionnaire. However, should doubts arise during the field interview concerning the information to be reported, the interviewer should base his decision on the general purposes of the questionnaire as outlined above.

The interview questionnaire is comprised of three elements:

1. Sheet #1 provides the detailed identification of the agency and sub-unit, and a detailed listing of program activities conducted by that unit.
2. Sheets #2 & #3 are concerned with specific information related to the individual program activities identified on sheet #1.
3. Slip Sheet (relates to item #7, page 2) is intended to provide detailed information on each item or category employed in the decision/operation process of each program activity.

Thus each interview should yield:

- a summary sheet listing the agency and its specific program activities;
- a detailed program information sheet for each program activity, including a slip sheet for each item or category of data employed in the decision/operation process for that program.

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Instructions for Sheet #1 -- Data Inventory

Jurisdiction: Specify legal title of jurisdiction -- e.g. State of Virginia; City of _____; _____ Regional Planning District; etc.

Agency, Division, Section: Specify as precisely as possible the organizational designation of the unit -- e.g.

Agency: Governor's Office
Division: Division of State Planning and Community Affairs
Section: Special Programs Section
(if further refinement is required, make marginal notes)

Address: Mailing address of the specific unit and telephone

Program Activities: Listing of major program elements performed by the agency. The description of these program activities should be in specific output or process terms -- e.g. periodic reports on socio-economic conditions; regulation and inspection of sewage treatment facilities; etc. This listing should comprehend all program activities performed by the personnel assigned to the agency, and will serve as the lead-in for questions contained in the interview questionnaire.

Person Interviewed -- Title: Self-explanatory

Instructions for Data Inventory Questionnaire

Items #1 & #2: Same as on Data Inventory Sheet (#1).

Item #3, Program Title: Individual program title drawn from listing compiled on Data Inventory Sheet.

Item #4, Program Objectives: Information supplied for this item should relate to the future condition sought to be

APPENDIX B

achieved through the program activities, and not to the activities involved in program operation -- e.g. -- The objective(s) of a program of testing and regulation of public water supplies may be to:

- a. prevent the spread of communicable disease
- b. reduce infant mortality
- c. reduce threats to individual health caused by chemical impurities in drinking water.

Item #5, Source of Funding: Source of funding for each program activity should be specified, whether total or partial from state or local appropriations, State or Federal Grant, etc. If a grant program is involved, specify the granting jurisdiction and agency, the title of the grant program, and in all instances of divided funding, the proportion of funding provided by each source should be specified.

Item #6, Types of Decisions (by category): Specific types of program decisions made by the agency for program planning and/or investment in the time frame of long range, short range, and current operations should be identified by the agency representatives and the elements of information that enter into each type or category of decision. Include land use, population, economic and trip use data inputs (short range might be a new bridge based on recent

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traffic counts). E.g. long-range highway planning may be twenty-five years, while long-range health decisions may relate to a two-year program alleviating a health hazard, and short range might relate to scheduling personnel over the next year, given budget and manpower inputs.

Item #8, Models Employed: A brief description of the analytic models employed by the agency for various types of categories of information, including, where possible, a summary description of the relationship postulated in the model. E.g. straight line projections, econometric modeling, water flow models, intuition based on "past trends."

Item #9, Data Users: Listing of the agencies or private firms to which the unit provides information and/or data compilations.

Slip Sheet - Item #7 -- Data Description

Item A - 1. Type: The specific class or category of information used: e.g. population number, age-sex distributions, crop types, road system, etc.

- 2. Form: Census reports, computer tapes, periodic reports of other agencies, aerial photographs, maps, charts.

- 3. Source: Specific agency from which this item of information is derived. If a consultant firm compiles the data and presents either data or recommendations,

Instructions - p. 6

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obtain the name of the firm and a copy of the report(s) if possible.

- 4. Accuracy: What level of error can be tolerated and still come to a sound conclusion? E.g. Legal description of land vs. twenty percent error in traffic still not overloading a recreation system.
 - 5. Frequency of Update: How often are files or maps updated as changes occur on a periodic basis, summarizing all changes.
 - 6. Time Lag: The time period between collection of information and its availability for agency use.
- B - 1. Cost Estimate: Where readily available, the interviewer should enter the agency's estimate of the cost of securing the specific items of data.
- 2. Geographic Area: In connection with A1 & 2, where applicable, indicate the smallest geographic area, county, city, traffic zone, census district for which the data are collected.

UNIVERSITY OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SCIENCES
COASTAL ZONE RESEARCH PROJECT

Date _____

Interviewer _____

DATA INVENTORY

Jurisdiction: _____

Agency: _____

Division: _____

Section: _____

Address: _____

Program Activities:

Person Interviewed

Position

UNIVERSITY OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL SCIENCES
COASTAL ZONE RESEARCH PROJECT

No. _____ of _____
Date _____
Interviewer _____

DATA INVENTORY QUESTIONNAIRE

1. Jurisdiction: _____
2. Agency Designation: _____
(A) Division: _____
(B) Section: _____
3. Program Title: _____
4. Program Objective:

5. Source of Funding: (Federal Agency or Grant Program)

6. Types of Decisions in Program Objectives:
 (A) Long Range Planning Investment
 (B) Short Range Planning Investment
 (C) Operation Regulation Coordination *
7. See Slip Sheet.
8. Models Employed in Analysis of Program Objective (Short Description):

9. Data or Report Users (List by Agency):

10. Comments:

7. Data Descriptions:

- (A) 1. Type: _____
2. Form: _____
3. Source: _____
4. Accuracy: _____
5. Frequency of Update: _____
6. Lag: (Collection to Availability) _____
- (B) 1. Cost Estimate: _____

APPENDIX C

Virginia State Agencies and Programs

Surveyed by Coastal Zone Project - Summer 1970

APPENDIX C

**Virginia State Agencies and Programs Surveyed
by Coastal Zone Research Project -- Summer 1970**

I PUBLIC HEALTH PROGRAMS

Program Number	Function	Program Title	Agency
1	Enforcement	Licensing of Motor Vehicle Operators	Division of Motor Vehicles
2	Enforcement	Vehicle Registration and Title	Division of Motor Vehicles
3	Enforcement	Game Law Enforcement	Commission of Game and Inland Fisheries
11	Enforcement	Air Quality Monitoring	Air Pollution Control Board
4	License/Inspection/ Code Enforcement	Dairy Supervision and Inspection	Dept. of Agriculture and Commerce
5	License/Inspection/ Code Enforcement	Consumer Protection -- Meat Inspection	Dept. of Agriculture and Commerce
6	License/Inspection/ Code Enforcement	Animal Disease Control	Dept. of Agriculture and Commerce
7	License/Inspection/ Code Enforcement	Consumer and Producer Protection	Dept. of Agriculture and Commerce

APPENDIX C			
Program Number	Function	Program Title	Agency
8	License/Inspection/Code Enforcement	Food Processing Monitoring	Dept. of Agriculture & Commerce
9	License/Inspection/Code Enforcement	Shellfish Sanitation	Department of Health
2	License/Inspection/Code Enforcement	Vehicle Registration and Title	Division of Motor Vehicles
1	License/Inspection/Code Enforcement	Licensing of Motor Vehicle Operators	Division of Motor Vehicles
10	License/Inspection/Code Enforcement	Motor Vehicle Dealer Registration	Division of Motor Vehicles
11	License/Inspection/Code Enforcement	Air Quality Monitoring	Air Pollution Control Board
12	License/Inspection/Code Enforcement	Air Pollution Control	Air Pollution Control Board
13	License/Inspection/Code Enforcement	Regulation of Marine Bottoms Areas	Marine Resources Commission
14	License/Inspection/Code Enforcement	Licensing and Regulation of Flight Related Activities	State Corporation Commission
15	License/Inspection/Code Enforcement	Water Pollution Control and Abatement	Ohio River Valley Water Sanitation Board

Program Number	Function	Program Title	Agency
16	License/Inspection/ Code Enforcement	Water Pollution Control and Abatement	Potomac River Basin Commission
17	License/Inspection/ Code Enforcement	Fish Kill Investigation	Water Control Board
II HUMAN RESOURCES DEVELOPMENT PROGRAMS			
4	Health	Dairy Supervision and Inspection	Dept. of Agriculture and Commerce
5	Health	Consumer Protection -- Meat Inspection	Dept. of Agriculture and Commerce
6	Health	Animal Disease Control	Dept. of Agriculture and Commerce
7	Health	Consumer and Producer Protection	Dept. of Agriculture and Commerce
8	Health	Food Processing Moni- toring	Dept. of Agriculture and Commerce
18	Health	Comprehensive Water Resources Planning	Dept. of Conservation and Economic Development
19	Health	Waste Treatment Monitor- ing	Dept. of Health

APPENDIX C

Program Number	Function	Program Title	Agency
20	Health	Water Quality	Department of Health
52	Health	Dairy Product Sanitation	Department of Health
11	Health	Air Quality Monitoring	Air Pollution Control Board
12	Health	Air Pollution Control	Air Pollution Control Board
21	Health	Analysis of Water Impoundments	Commission on Outdoor Recreation
53	Health	Pesticide Monitoring	VIMS
24	Health	Water Quality Monitoring	Water Pollution Control Board
17	Health	Fish Kill Investigation	Water Control Board
18	Recreation	Comprehensive Water Resources Planning	Department of Conservation and Economic Development
22	Recreation	Virginia Forest Survey	Department of Conservation and Economic Development

APPENDIX C

Program Number	Function	Program Title	Agency
23	Recreation	Scenic River Analysis	Commission on Outdoor Recreation
24	Recreation	Water Quality Monitoring	Water Control Board
25	Recreation	Jellyfish Control Research	VIMS
III PHYSICAL AND ECONOMIC DEVELOPMENT PROGRAMS			
19	Sanitation	Waste Treatment Monitoring	Department of Health
20	Sanitation	Water Quality	Department of Health
15	Sanitation	Water Pollution Control and Abatement	Ohio River Valley Water Sanitation
21	Sanitation	Analysis of Water Impoundments	Commission on Outdoor Recreation
24	Sanitation	Water Quality Monitoring	Water Control Board
17	Sanitation	Fish Kill Investigations	Water Control Board
26	Sanitation	Regulation of Waste Treatment Plan	Water Control Board
18	Town Planning	Comprehensive Water Resources Planning	Department of Conservation and Economic Development

APPENDIX C

Program Number	Function	Program Title	Agency
27	Town Planning	Highway Planning	Department of Highways
28	Town Planning	Port Development	Virginia Ports Authority
29	Economic Development	Promotion of Agricultural Exports	Dept. of Agriculture and Commerce
30	Economic Development	Market News	Dept. of Agriculture and Commerce
31	Economic Development	Analysis and Planning for Agricultural Programs	Commission of the Industry of Agriculture
32	Economic Development	Geologic Mapping	Dept. of Conservation and Economic Development
33	Economic Development	Topographic Mapping	Dept. of Conservation and Economic Development
34	Economic Development	Geophysical Mapping	Dept. of Conservation and Economic Development
35	Economic Development	Economic Development -- Minerals	Dept. of Conservation and Economic Development
18	Economic Development	Comprehensive Water Resources Planning	Dept. of Conservation and Economic Development
22	Economic Development	Virginia Forest Survey	Dept. of Conservation and Economic Development

APPENDIX C

Program Number	Function	Program Title	Agency
27	Economic Development	Highway Planning	Department of Highways
36	Economic Development	Social and Economic Studies	Division of State and County Affairs
37	Economic Development	Federally Aided Planning Review	Division of State and County Affairs
11	Economic Development	Air Quality Monitoring	Air Pollution Control Board
12	Economic Development	Air Pollution Control	Air Pollution Control Board
39	Economic Development	Oyster Bed Management	Marine Resources Commission
40	Economic Development	Airport Planning	State Corporation Commission
41	Economic Development	Game Management	Commission of Game and Inland Fisheries
42	Economic Development	Fisheries Management	Commission of Game and Inland Fisheries
43	Economic Development	Regulation of Milk Production	Milk Commission
23	Economic Development	Scenic River Analysis	Commission on Outdoor Recreation

APPENDIX C

Program Number	Function	Program Title	Agency
54	Economic Development	Shellfish Management	Potomac River Fisheries Commission
28	Economic Development	Port Development	Virginia Ports Authority
44	Economic Development	Sea Food Research	VIMS
45	Economic Development	Marsh and Wetlands Research	VIMS
-45-	46	Physical and Geological Oceanographic Research	VIMS
47	Economic Development	Thermal Pollution Research	VIMS
48	Economic Development	Shellfish Growth and Monitoring	VIMS
49	Economic Development	Oceanographic Studies	VIMS
27	Engineering	Highway Planning	Department of Highways
28	Engineering	Highway Building and Maintenance	Department of Highways
21	Engineering	Analysis of Water Impoundments	Commission on Outdoor Recreation
27	Transportation	Highways Planning	Department of Highways
28	Transportation	Highway Building and Maintenance	Department of Highways

APPENDIX C

Program Number	Function	Program Title	Agency
55	Transportation	Local and Regional Planning	Division of State Planning and County Affairs
21	Public Utilities	Analysis of Water Impoundments	Commission on Outdoor Recreation
IV PUBLIC FINANCE PROGRAMS			
50	Revenue Collection	Motor Fuel Tax Administration	Division of Motor Vehicles
51	Revenue Collection	Motor Vehicle Sales Tax Administration	Division of Motor Vehicles
28	Revenue Collection	Port Development	Virginia Ports Authority

APPENDIX D

Data Items Used by Virginia State Agencies

APPENDIX D
Data Items Used by Virginia State Agencies

No.	Data Item	Program	Potential R/S Applications by Type of Sensor or System*
			A B C D E F G
1.	Specifics of foreign regulations on imports	Promotion of Agricultural Exports	
2.	Foreign market demands for Virginia products	Promotion of Agricultural Exports	
3.	International transportation costs and routes	Promotion of Agricultural Exports	
4.	Volume of exports from Virginia -- by category	Promotion of Agricultural Exports	
5.	Location of milk herds and producers	Dairy Supervision and Inspection; Regulation of Milk Production	X 2

*A -- Black and White; B -- Color; C -- Color I/R; D -- Thermal I/R; E -- ERTSA; F -- Resolution required (in meters); G -- Frequency (H=Hourly; D=Daily; W=Weekly; M=Monthly; Q=Quarterly; S=Semi-annually; A=Annually)

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System					
			A	B	C	D	E	F
6.	Location of milk processing plants	Dairy Supervision and Inspection	X					2 Q
7.	Location of slaughter-houses	Consumer Protection -- Meat Inspection	X					2 Q
8.	Location and incidence of Brucellosis	Animal Disease Control						
9.	Location and incidence of Hog Cholera	Animal Disease Control						
10.	Location and incidence of viral diseases affecting cattle	Animal Disease Control						
11.	Location and incidence of Anaplasmosis and Mastitis	Animal Disease Control						
12.	Types and acreage of crops grown in Virginia	Consumer and Producer Protection -- Marsh and Wetlands Research	X					1 S
13.	Types and content of fertilizers distributed in Virginia	Consumer and Producer Protection						
14.	Octane level and water content of motor fuels sold in Va.	Consumer and Producer Protection						
15.	Location of retail motor fuel outlets	Consumer and Producer Protection	X					10 A

No.	Data Item	Program	Potential R/S Applications by Type of Sensor or System**						
			A	B	C	D	E	F	G
16.	Chemical content of foods retailed in Virginia	Consumer and Producer Protection							
17.	Type and content of animal foods distributed in Virginia	Consumer and Producer Protection							
18.	Type and content of pesticides marketed in Virginia	Consumer and Producer Protection							
19.	Type and content of herbicides marketed in Virginia	Consumer and Producer Protection							
20.	Source of foods processed in Virginia	Food Processing Monitoring							
21.	Destination of foods processed in Virginia	Food Processing Monitoring							
22.	Condition or grade of foods processed in Virginia	Food Processing Monitoring							
23.	Volume of foods processed in Virginia -- by type	Food Processing Monitoring							
24.	Selling price (wholesale) of foods processed in Virginia -- by lot	Food Processing Monitoring							
25.	Retail prices of selected samples of food products	Market News							

No.	Data Item	Program	Potential R/S Applications by Type of Sensor or System*
			A B C D E F G
26.	Wholesale market prices and volumes -- livestock	Market News	
27.	Wholesale market prices and volumes -- major commodities	Market News	
28.	Strength of gravity/magnetic field throughout Virginia	Geophysical Mapping	
29.	Location and quality of heavy ore deposits	Economic Development -- Minerals	
30.	Location and quality of clay deposits	Economic Development -- Minerals	
31.	Type and quality of mine and quarry output	Economic Development -- Minerals	X
32.	Soil types and distribution	Economic Development -- Minerals; Federally Aided Planning Review	X
33.	Estimates and projections of value added -- by SIC by river basin	Comprehensive Water Resource Planning	X X X 1 1
34.	Estimates and projections of gross manufacturing output - by river basin	Comprehensive Water Resource Planning	

No.	Data Item	Program	Potential R/S Applications by Type of Sensor or System							
				A	B	C	D	E	F	G
35.	Estimates and projections of manufacturing employment -- by river basin	Comprehensive Water Resources Planning								
36.	Stream flow rates	Comprehensive Water Resources Planning; Analysis of Water Impoundments; Water Quality Monitoring; Regulation of Waste Treatment Plan Review								
37.	Stream flow -- low flow frequencies	Comprehensive Water Resources Planning								
38.	Stream flow duration curves	Comprehensive Water Resources Planning								
39.	Flood frequency curves	Comprehensive Water Resources Planning								
40.	Ground water quality	Comprehensive Water Resources Planning								
41.	Number of farms -- by river basin	Comprehensive Water Resources Planning	X							
42.	Average size of farms (ac.) -- by river basin	Comprehensive Water Resources Planning	X							

No.	Data Item	Program	Potential R/S Applications by Type of Sensor or System
			A B C D E F G
43.	Number of farms using irrigation -- by river basin	Comprehensive Water Resources Planning	X 10 A
44.	Income from recreation -- by river basin	Comprehensive Water Resources Planning	X
45.	Stream profiles	Comprehensive Water Resources Planning	X 1 A
46.	Salinity distribution curves	Comprehensive Water Resources Planning	X
47.	Major floods -- location; duration; level	Comprehensive Water Resources Planning	X X 1 A
48.	Flood plain extent	Comprehensive Water Resources Planning	X
49.	Water based recreation data -- users and facilities	Comprehensive Water Resources Planning	
50.	Water demand projections -- by river basin	Comprehensive Water Resources Planning	
51.	Water discharge projections	Comprehensive Water Resources Planning	
52.	Nitrogen content of effluents	Comprehensive Water Resources Planning	

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System					
			A	B	C	D	E	F
53.	Phosphorus content of effluents	Comprehensive Water Resources Planning						
54.	Estimates and projections of regional power needs	Comprehensive Water Resources Planning						
55.	Area of forest lands -- by category	Virginia Forest Survey; Highway Building and Maintenance; Federally Aided Planning Review	X	X	X		5	A
56.	Volume of timber standing -- by category	Virginia Forest Survey				X		5 A
57.	Utilization of timber production -- by category	Virginia Forest Survey						
58.	Estimated annual timber growth -- by category	Virginia Forest Survey						
59.	Annual timber cut -- by category	Virginia Forest Survey				X		5 A
60.	Waste treatment plant locations	Waste Treatment Monitoring; Dairy Product Sanitation; Water Quality Monitoring	X	X	X		10	A
61.	Effluent discharge stations	Waste Treatment Monitoring; Dairy Product Sanitation; Water Quality Monitoring	X	X			1	A

No.	Date Item	Program	Potential R/S Applications by Type of Sensor or System
			A B C D E F G
62.	Effluent characteristics	Waste Treatment Monitoring; Fish Kill Investigations	X X 1 A
63.	Water treatment plant locations	Water Quality	X X 10 A
64.	Shellfish stock locations	Dairy Product Sanitation; Oyster Bed Management; Regulation of Marine Bottoms Area; Shellfish Management	X X 1 Q
65.	Potential shellfish growing areas	Dairy Product Sanitation	X 1 Q
66.	Restricted shellfish areas	Dairy Product Sanitation; Oyster Bed Management	
67.	Polluted areas for shellfish	Dairy Product Sanitation	
68.	Location and area of residential land use	Highway Building and Maintenance; Federally Aided Planning Review	X 5 A
69.	Location and area of commercial land use	Highway Building and Maintenance; Federally Aided Planning Review	X 5 A
70.	Location and area of industrial land use	Highway Building and Maintenance; Federally Aided Planning Review	X 5 A

No.	Data Item	Program	Potential R/S Applications by Type of Sensor or System						
			A	B	C	D	E	F	G
71.	Location and area of public land use	Highway Building and Maintenance; Federally Aided Planning Review	X						5 A
72.	Location and area of miscellaneous land uses	Highway Building and Maintenance; Federally Aided Planning Review	X		X				5 A
73.	Number of existing housing units	Highway Building and Maintenance; Federally Aided Planning Review	X						5 A
74.	Projected number of housing units	Highway Building and Maintenance							
75.	School populations -- by place of residence	Highway Building and Maintenance							
76.	School populations -- by school location	Highway Building and Maintenance							
77.	Level of retail sales	Highway Building and Maintenance; Social & Economic Studies; Federally Aided Planning Review							
78.	Local government development policies and plans	Highway Building and Maintenance							

No.	Data Item	Program	Potential R/S Applications by Type of Sensor or System						
			A	B	C	D	E	F	G
79.	Local industrial promotion efforts	Highway Building and Maintenance							
80.	Local zoning regulations	Highway Building and Maintenance							
81.	Traffic volumes	Highway Building and Maintenance; Federally Aided Planning Review							
82.	Trip data -- origin/destination	Highway Building and Maintenance							
83.	Capacity of existing transport facilities	Highway Building and Maintenance							
84.	Speed of traffic flow	Highway Building and Maintenance							
85.	Location of major traffic generators	Highway Building and Maintenance							
86.	Location of quality of rock, sand, and other construction materials	Federally Aided Planning Review							

No.	Data Item	Program	Potential R/S Applications by Type of Sensor or System						
			A	B	C	D	E	F	G
87.	Assessed value of property	Federally Aided Planning Review							
88.	Current market value of property	Federally Aided Planning Review							
89.	Specific transportation facility design features	Federally Aided Planning Review							
90.	Vehicle ownership -- by city/county	Highway Building and Maintenance							
91.	Number of vehicles -- by type and by city/county	Highway Building and Maintenance							
92.	Number of vehicles -- by year of manufacture	Vehicle Registration and Title							
93.	Amount of registration fees collected	Vehicle Registration and Title							
94.	License number of specific vehicles	Vehicle Registration and Title							
95.	Number of licensed motor vehicle operators -- by city/county	Licensing of Motor Vehicle Operators							
96.	Personal characteristics of licensed m.v. operators	Licensing of Motor Vehicle Operators							

No.	Data Items	Program	Potential R/S Applications by Type of Sensor or System					
			A	B	C	D	E	F
97.	Amount of licensing fees collected	Licensing of Motor Vehicle Operators						
98.	Motor fuel sales by city/county	Motor Fuel Tax Administration						
99.	Motor fuel tax revenues by city/county	Motor Fuel Tax Administration						
100.	Total motor fuel tax revenues	Motor Fuel Tax Administration						
101.	Number of motor vehicles sold annually	Motor Vehicle Sales Tax Administration						
102.	Annual m.v. sales tax revenue -- total & by city/county	Motor Vehicle Sales Tax Administration						
103.	Number and location of registered motor vehicle dealers	Motor Vehicle Dealer Registration						
104.	Level and distribution of family incomes	Social and Economic Studies						
105.	Estimated and projected level of family incomes	Comprehensive Water Resources Planning; Social and Economic Studies						
106.	Employment-residence locations	Social and Economic Studies						

No.	Data Items	Program	Potential R/S Applications by Type of Sensor or System						
			A	B	C	D	E	F	G
107.	Number and type of employment	Comprehensive Water Resources Planning; Social and Econ. Studies; Federally Aided Planning Reviews							
108.	Demographic characteristics of population	Social and Economic Studies; Federally Aided Planning Reviews							
109.	Estimated and projected gross population -- by location	Comprehensive Water Resources Planning; Highway Building and Maintenance; Social and Economic Studies							
110.	Quality of housing stock -- by location	Social and Economic Studies							
111.	Location and capacity of public facilities	Federally Aided Planning Review	X						
112.	Location and dimension of water-sheds, water courses, and flood plains	Comprehensive Water Resources Planning; Federally Aided Planning Review	X	X	X	X	X	10	A
113.	Construction starts -- by category	Federally Aided Planning Review	X						
114.	Concentration of SO ₃ in atmosphere	Air Quality Monitoring							
115.	Concentration of hydrocarbons in atmosphere	Air Quality Monitoring							

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System
			A B C D E F G
116.	Monthly dust fall	Air Quality Monitoring	
117.	Concentration of SO ₂ in atmosphere	Air Quality Monitoring	
118.	Concentration of NO ₂ in atmosphere	Air Quality Monitoring	
119.	On-site emission (OSE) of dust	Air Pollution Control	
120.	On-site emission (OSE) of SO ₃	Air Pollution Control	
121.	OSE -- Hydrocarbons	Air Pollution Control	
122.	OSE -- SO ₂	Air Pollution Control	
123.	OSE -- NO ₂	Air Pollution Control	
124.	OSE -- smoke	Air Pollution Control	
125.	Low water marks -- coastline	Regulation of Marine Bottom Areas	X X 10 H
126.	Location of property lines	Regulation of Marine Bottom Areas	
127.	Location of piers, docks, and pipelines	Regulation of Marine Bottom Areas	X
			10 A

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System					
			A	B	C	D	E	F
128.	Location of areas proposed for dredging	Regulation of Marine Bottom Areas	X				10	as required
129.	Number of licensed pilots -- by city/county	Licensing and Regulation of Flight Related Activities						
130.	Number of licensed mechanics -- by city/county	Licensing and Regulation of Flight Related Activities						
131.	Number of licensed flight instructors -- by city/county	Licensing and Regulation of Flight Related Activities						
132.	Number and type of licensed aircraft	Licensing and Regulation of Flight Related Activities						
133.	Number and location of licensed airports	Licensing and Regulation of Flight Related Activities	X	X	X	X	100	A
134.	Number and location of licensed heliports	Licensing and Regulation of Flight Related Activities	X	X	X	X	10	A
135.	Number and location of private airstrips	Licensing and Regulation of Flight Related Activities	X	X	X	X	100	A
136.	Number and location of approved drop zones	Licensing and Regulation of Flight Related Activities						
137.	Number and location of licensed aircraft dealers	Licensing and Regulation of Flight Related Activities						

No.	Data Item	Program	Potential R/S Application by	Type of Sensor or System					
			A	B	C	D	E	F	G
138.	Deer population -- by region	Game Management							
140.	Annual doe kill -- by county	Game Management							
141.	Annual bear kill -- by county	Game Management							
142.	Annual wild turkey kill -- by county	Game Management							
143.	Estimated upland game popu- lation	Game Management							
144.	Annual upland game kill	Game Management							
145.	Annual migratory waterfowl kill	Game Management							
146.	Estimated fish population -- by species	Fisheries Management							
147.	Number of residents and non- residents authorized to hunt, fish, or trap	Game Law Enforcement							
148.	Number and location of milk distributors	Regulation of Milk Production							
149.	Number and location of milk wholesalers	Regulation of Milk Production							

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System
			A B C D E F G
150.	Number and location of milk retailers	Regulation of Milk Production	
151.	Type and volume of milk handled by each type of operator	Regulation of Milk Production	
152.	Wholesale milk prices -- by region	Regulation of Milk Production	
153.	Retail milk prices -- by region	Regulation of Milk Production	
154..	Base production allocated -- by type of milk by region	Regulation of Milk Production	
155.	Volume of milk delivered -- by type of milk by region	Regulation of Milk Production	
156.	Volume of milk sales to other states	Regulation of Milk Production	
157.	Water quality -- volume of suspended solids	Water Pollution Control and Abatement; Water Quality Monitoring	
158.	Water quality -- mineral content	Comprehensive Water Resources Planning; Water Pollution Control and Abatement; Water Quality Monitoring	
159.	Water quality -- B.O.D. (Biological Oxygen Demand)	Comprehensive Water Resources Planning; Water Pollution Control and Abatement; Physical and Geological Oceanographic Research	

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System						
			A	B	C	D	E	F	G
160.	Water quality -- D.O.(Dissolved Oxygen)	Comprehensive Water Resources Planning; Water Pollution Control and Abatement; Seafood Research; Marsh & Wetlands Research; Water Quality Monitoring; Physical and Geological Oceanographic Research					X		
161.	Water temperature	Dairy Product Sanitation; Water Pollution Control & Abatement; Analysis of Water Impoundments; Seafood Research; Jellyfish Control Research; Thermal Pollution Research; Oceanographic Studies; Water Quality Monitoring							
162.	Water quality -- metal content	Comprehensive Water Resources Planning; Water Pollution Control and Abatement; Water Quality Monitoring							
163.	Water quality -- acidity (pH)	Comprehensive Water Resources Planning; Water Pollution Control and Abatement; Water Quality Monitoring							

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System
			A B C D E F G
164.	Land ownership and parcel size	Scenic River Analysis	X X 1 A
165.	Location of scenic river sites	Scenic River Analysis	X X X X 5 A
166.	Water quality -- level of salination	Analysis of Water Impoundments Seafood Research Marsh and Wetlands Research Thermal Pollution Research Pesticide Monitoring Physical and Geological Oceanographic Research	X X X X X X 5 A
167.	Water quality -- alkalinity	Water Pollution Control & Abatement Water Quality Monitoring	
168.	Water quality -- chlorine content	Water Pollution Control & Abatement; Thermal Pollution Research	
169.	Water quality -- sulfate content	Comprehensive Water Re-sources Planning Water Pollution Control & Abatement; Thermal Pollution Research	
170.	Water quality -- coliform content	Comprehensive Water Re-sources Planning Water Pollution Control & Abatement; Water Quality Monitoring	

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System					
			A	B	C	D	E	F
171.	Turbidity of water	Water Pollution Control and Abatement	X			10	D	
172.	Oyster catch/ yield	Shellfish Management Shellfish Growth Monitoring						
173.	Clam catch/yield	Shellfish Management Shellfish Growth Monitoring						
174.	Number of licenses issued for shellfish harvest	Shellfish Management						
175.	Number of shellfish industry boats registered	Shellfish Management						
176.	Shipping tonnages -- by port	Port Development						
177.	Shipping tonnages -- by category of item	Port Development						
178.	Harbor depths	Port Development						
179.	Harbor channel lengths	Port Development	X		1	A		
180.	Harbor channel widths	Port Development	X				1	A
181.	Shipping rates	Port Development						

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System					
			A	B	C	D	E	F
182.	Oyster disease rates	Seafood Research						
183.	Oyster mortality rates	Seafood Research						
184.	Density of crab population	Seafood Research						
185.	Number of crab pots -- by area	Seafood Research	X					
186.	Density of jellyfish	Jellyfish Control Research						
187.	Wildlife populations of marsh areas	Marsh and Wetlands Research						
188.	Concentration of pesticides in oysters	Pesticide monitoring						
189.	Water current direction	Physical and Geological Oceanographic Research; Oceanographic Studies						
190.	Water current velocity	Physical and Geological Oceanographic Research; Oceanographic Studies						
191.	Tidal velocity	Physical and Geological Oceanographic Research	1	H				
192.	Extent of tidal change	Physical and Geological Oceanographic Research	1	H				

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System
			A B C D E F G
193.	Wave heights	Oceanographic Studies	X
194.	Air temperatures	Oceanographic Studies	
195.	Wind velocity and direction	Oceanographic Studies	
196.	Water quality -- color	Water Quality Monitoring	X
197.	Location of public water supplies	Water Quality Monitoring	X
198.	Location of water gauging stations	Water Quality Monitoring	X
199.	River mileage -- location and classification	Water Quality; Water Quality Monitoring	X
200.	Projected thermal dispersion effect in water	Regulation of Waste Treatment Review Plan	
201.	Projected stream assimilation capability	Regulation of Waste Treatment Review Plan	
202.	Erosion rates -- by type of land use	Comprehensive Water Resources Planning	X
203.	Types of standing crops in marsh areas	Marsh and Wetlands Research	X

No.	Data Item	Program	Potential R/S Application by Type of Sensor or System
			A B C D E F G
204.	Standing water levels Marsh and Wetlands Research	X	X 1 W
205.	Water quality -- sedimentation	Thermal Pollution Research; Physical and Geological Oceanographic Research	X 10 D/W
206.	Water quality -- organic content	Thermal Pollution Research	10 D/W

APPENDIX E

Summary of Data Items with High Remote Sensing Potential Used by Virginia State Agencies

APPENDIX E

DATA ITEM	PROGRAM	AGENCY	CURRENT SOURCE						R/S APPLICATIONS -- LOW/HIGH
			A	B	C	D	E	G	
1) Location of milk herds and producers	Dairy Supv. & Inspection	Dept. of Agric. & Commerce	X						L
Location of milk herds and producers	Regulation of milk production	Milk Commission							L
2) Location and incidence of Bruceellosis	Animal Disease Control	Dept. of Agric. & Commerce					X		L
3) Location and incidence of Hog Cholera	Animal Disease Control	Dept. of Agric. & Commerce					X		L
4) Location and incidence of viral diseases affecting cattle	Animal Disease Control	Dept. of Agric. & Commerce					X		L
5) Location and incidence of Anaplasmosis and/or Mastitis	Animal Disease Control	Dept. of Agric. & Commerce					X		L

** A -- Black and White; B -- Color; C -- Color I/R; D -- Thermal I/R; E -- ERTSA; G -- Frequency.

APPENDIX E

DATA ITEM	PROGRAM	AGENCY	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR**						R/S APPLICATIONS-- LOW/HIGH
			CURRENT SOURCE	A	B	C	D	E	
6) Types and acreage of crops	Consumer & Producer Protection	Dept. of Agric. & Commerce	Commodity registration. Random field inspection.	X	X	X			H
Types and acreage of crops	Wetlands Research	VIMS	Field surveys.	X	X	X			H
7) Location of motor fuel outlets	Consumer & Producer Protection	Dept. of Agric. & Commerce	Registration	X					L
8) Source of foods processed in Virginia	Food Processing Monitoring	Dept. of Agric. & Commerce	In-plant inspections	X	X	X			L
9) Type and quality of mine & quarry output	Econ. Development -- Minerals	Dept. of Conser. & Econ. Devel.	Field surveys	X					L
10) Soil types and distribution	Econ. Devel. -- Minerals	Dept. of Conser. & Econ. Devel.	Field surveys	X	X				H
Soil types and distribution	Local & Regional Plans. Geologic mapping. Highway planning. Topographic mapping.	D.S.P.C.A. U.S. Dept. of Agric. -- VPI	X	X					H

APPENDIX E

DATA ITEM	PROGRAM	AGENCY	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR**						R/S APPLICATIONS LOW/HIGH
			CURRENT SOURCE	A	B	C	D	E	
11) Number of farms -- by river basin	Comprehensive Water Resources Planning	Dept. of Cons. and Econ. Dev.	Census of Agriculture	X	X	X			L
12) Aver. size of farms -- by river basin	Comprehensive Water Resources Planning	Dept. of Conserv. & Econ. Devel.	Census of Agriculture	X					L
13) Number of farms using irrigation -- by river basin	Comprehensive Water Resources Planning	Dept. of Cons. & Econ. Devel.	Census of Agriculture	X	X				L
14) Flood Plain Data	Comprehensive Water Resources Planning	Dept. of Cons. & Econ. Devel.	USA - Corps of Engineers	X	X	X			H
15) Stream Profiles	Comprehensive Water Resources Planning	Dept. of Cons. & Econ. Devel.	Agency staff	X					H
16) Area of forest land -- by category	Virginia Forest Survey	Dept. of Cons. & Econ. Devel.	Aerial photo field survey	X	X				L
Area of forest land -- by category	Highway Planning Local and Regional Plans Topographic mapping	Dept. of Highways D.S.P.C.A. USGS -- Highway maps	Aerial photo field survey	X	X	X			L

APPENDIX E

DATA ITEM	PROGRAM	AGENCY	CURRENT SOURCE	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR						R/S APPLICATIONS ; LOW/HIGH
				A	B	C	D	E	G	
17) Volume of timber standing	Virginia Forest Survey	Dept. of Conserv. & Econ. Devel.	Unknown	X	X					L
18) Annual Timber Cut	Virginia Forest Survey	Dept. of Conserv. & Econ. Devel.	Unknown		X					L
19)	Waste treatment plant location	Dept. of Health Monitoring	USGS - CGS maps. ASCS photos	X	X	X				L
	Waste treatment plant location	Dept. of Health	USGS - CGS maps. ASCS photos.	X	X	X				L
	Waste treatment plant location	Water Control Board	Unknown	X	X	X				L
20)	Effluent Discharge locations	Waste Treatment Monitoring	Dept. of Health	ASCS photos	X	X				H
	Effluent Discharge locations	Dept. of Health	Unknown		X	X				H
	Effluent Discharge locations	Water Quality Monitoring	Water Control Board	Unknown	X	X				H

APPENDIX E

DATA ITEM	PROGRAM	AGENCY	CURRENT SOURCE	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR					R/S APPLICATIONS--LOW/HIGH
				A	B	C	D	E	
21) Effluent Characteristics	Waste Treatment Monitoring	Dept. of Health	Unknown	X					H
Effluent Characteristics	Fish Kill Investigations; Regulation of Waste Treatment	Water Control Board	Field tests		X				L
22) Water Treatment plant locations	Water Quality	Dept. of Health	Unknown	X	X				L
Shellfish stock location	Shellfish Sanitation	Dept. of Health	CGS--USGS maps	X	X	X			H
Shellfish stock location	Oyster Bed Management	Marine Resources Commission	Field surveys	X	X	X			H
Shellfish stock location	Regulation of Marine Bottoms	Marine Resources Commission	Field surveys	X	X	X			H
Shellfish stock location	Shellfish Management; Local & Regional Planning	Potomac River Fisheries Commission	State agencies	X	X				H
24) Potential shellfish growing areas	Shellfish Sanitation; Regulation of Waste Treatment	Dept. of Health	Unknown				X		H

APPENDIX E

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DATA ITEM	PROGRAM	AGENCY	CURRENT SOURCE	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR						R/S APPLICATIONS: - LOW/HIGH
				A	B	C	D	E	G	
25) Location and area -- Residential land										
26) Commercial land use	Highway Planning	Dept. of Highways D.S.P.C.A.	Agency photo field surveys	X	X					H
27) Industrial land use	Local & Regional Plans	Dept. of Highways D.S.P.C.A.	Field surveys	X						L
28) Public Land use										
29) Misc. land use										
30) Number of existing housing units	Highway Planning	Dept. of Highways U.S. Census; Local records	X							
31) Location and capacity of public facilities	Local and Regional Plans	D.S.P.C.A.	Field survey	X						T
32) Location and dimensions of watersheds, water courses, & flood plains	Local & Regional Plans	D.S.P.C.A.	U.S. G.S. --- Highway maps	X	X	X	X			H
Location and dimensions of watersheds, water courses, and flood plains	Comprehensive Water Resources Plan; Topographic mapping	Dept. of Conserv. & Econ. Devel.	USA - Corps of Engineers	X	X	X	X			H

APPENDIX E

DATA ITEM	PROGRAM	AGENCY	CURRENT SOURCE	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR						R/S APPLICATIONS-- LOW/HIGH
				A	B	C	D	E	G	
33) Construction starts-- by category	Local & Regional Plans	D.S.C.P.A.	Local records	X						L
34) On-Site Emission (OSE) -- Smoke	Air Pollution Control	Air Pollution Control Board	Field Survey	X	X					L
35)	Location of piers, docks, & pipelines	Regulation of Marine Bottoms	Marine Resources Commission	Unknown	X				X	H
36)	Location of areas proposed for dredging	Regulation of Marine Bottoms; Reg. of Waste Treatment; Marsh and Wetlands Research	Marine Resources Commission	Unknown	X				X	H
37)	Number and location of licensed airports	Licensing and Regulation of Flight Related Activities	State Corporation Commission	Agency registration	X	X				L
38)	Number and location of licensed heliports	Licensing and Regulation of Flight Related Activities	State Corporation Commission	Agency registration	X	X				L

APPENDIX E

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DATA ITEM	PROGRAM	AGENCY	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR						R/S APPLICATIONS - LOW/HIGH
			CURRENT SOURCE	State Corporation Commission	Agency registration	X X	A B C D E G	L	
39) Number and location of private airstrips	Licensing & Regulation of Flight Related Activities								H
40) Water temperature	Shellfish Sanitation	Dept. of Health	Unknown			X			H
	Water Pollution Control & Abatement	Ohio River Valley Sanitation Board	USGS photos			X			H
	Water temperature	Analysis of Water Impoundments	Commission on Outdoor Recreation	Field Survey		X			H
	Water temperature	Seafood Research	VIMS	Field Survey		X			H
	Water temperature	Jellyfish Commission	VIMS	Field Survey		X			H
	Water temperature	Thermal Pollution Research	VIMS	Field Survey		X			H
	Water temperature	Pesticide Monitoring	VIMS	Field Survey		X			H

APPENDIX E

DATA ITEM	PROGRAM	AGENCY	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR SOURCE						R/S APPLICATIONS-- LOW/HIGH.
			A	B	C	D	E	G	
40) (continued) Water temperature	Oceanographic Research	VIMS							H
Water temperature	Oceanographic Studies	VIMS							H
Water temperature	Water Quality Monitoring	Water Control Board							H
41) Location of scenic river sites	Scenic River Analysis; Topographic Mapping	Commission on Outdoor Recreation							H
42) Land ownership and parcel size	Scenic River Analysis; Topographic Mapping	Commission on Outdoor Recreation	X	X	X	X	X		L
43) Turbidity of water	Water Pollution Control and Abatement; Regulation of Waste Treatment	Potomac River Basin Commission	F.W.Q.A.; U.S.D.A.						H

APPENDIX E

DATA ITEM	PROGRAM	AGENCY	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR						R/S APPLICATIONS -- LOW/HIGH
			CURRENT SOURCE	A	B	C	D	E	
44) Harbor channel width	Port Development	Virginia Ports Authority	USA - Corps of Engineers	X					L
45) Harbor channel length	Port Development	Virginia Ports Authority	USA - Corps of Engineers	X					L
46) Number of crab pots -- by area	Seafood Research	VIMS	Unknown		X				
47) Wave heights	Oceanographic Studies	VIMS	Unknown		X				
48) Water quality -- color	Water Quality Monitoring; Reg. of Waste Treatment	Water Control Board	Field surveys and tests		X				
49) Location of public water supplies	Water Quality Monitoring; Local & Regional Plans	Water Control Board	Unknown		X				L
50) Location of water gauging stations	Water Quality Monitoring	Water Control Board	Unknown		X				L

APPENDIX E

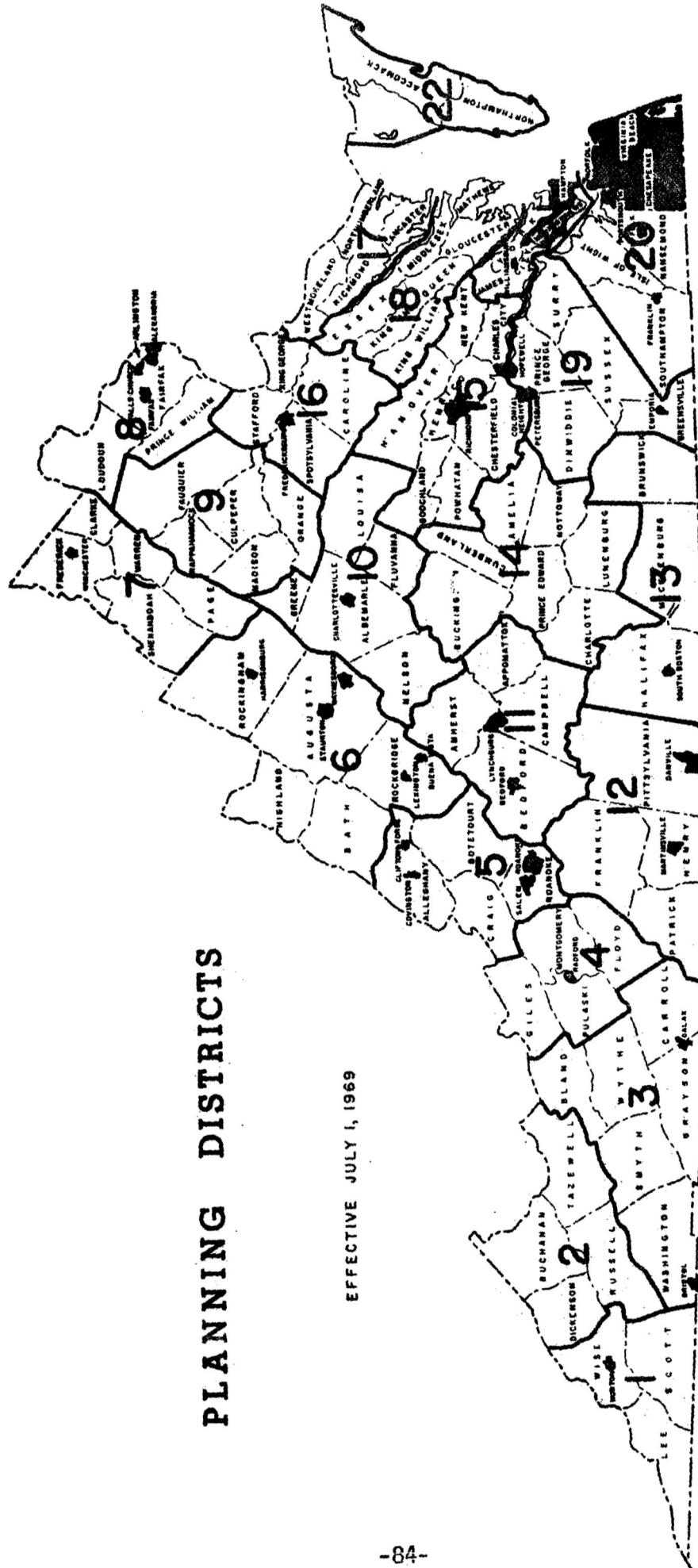
DATA ITEM	PROGRAM	AGENCY	CURRENT SOURCE	POTENTIAL REMOTE SENSING APPLICATIONS BY TYPE OF SENSOR						R/S APPLICATIONS--LOW/HIGH
				A	B	C	D	E	G	
51) River mileage -- location and classification	Water Quality Monitoring	Water Control Board	Unknown		X					L
River mileage -- location and classification	Water Quality	Dept. of Health	Unknown						X	L
52) Erosion rates -- by type of land use	Comprehensive Water Resources Plan	Dept. of Conservation & Econ. Develop.		USDA--SCS				X		H
53) Types of standing crops in marsh areas	Marsh and Wetlands Research	VIMS	Field survey	X	X					
54) Water quality -- sedimentation	Thermal Pollution Research	VIMS	Research by VIMS			Field surveys		X		
Water quality -- sedimentation	Phys. & Geol. Oceanographic Research	VIMS			Field surveys			X		
55) Water quality -- organic content	Thermal Pollution Research; Reg. of Waste Treatment	VIMS			Field surveys			X		

APPENDIX F

Virginia Regional Planning Districts
and Constituent Counties and Cities

PLANNING DISTRICTS

EFFECTIVE JULY 1, 1969



7-69



COMMONWEALTH OF VIRGINIA
OFFICE OF THE GOVERNOR

January 1, 1971

Division of State Planning
and Community Affairs
Charles H. Graves
Director

Telephone (703) 770-3785
1010 James Madison Building
109 Governor Street
Richmond, Virginia 23219

PLANNING DISTRICT COMMISSIONS

DISTRICT 1

LENOWISCO Planning District Commission
Mr. Bruce K. Robinette, Director
413 Wood Street
Big Stone Gap, Virginia 24219 (523-0121)

DISTRICT 2

Cumberland Plateau Planning District Commission
Mr. Andrew Chafin, Executive Director
Post Office Box 548
Lebanon, Virginia 24266 (889-1778)

DISTRICT 3

Mount Rogers Planning District Commission
Mr. Neville L. Rucker, Executive Director
P. O. Box 147 - The Hull Building
Marion, Virginia 24354 (783-5103)

DISTRICT 4

New River Valley Planning District Commission
Mr. John W. Epling, Executive Director
1612 Wadsworth Street
Radford, Virginia 24141 (639-0771)

DISTRICT 5

Fifth Planning District Commission
Mr. Robert M. Shannon, Executive Director
4841 Williamson Road, N.W.
Roanoke, Virginia 24012 (362-3777)

DISTRICT 6

Central Shenandoah Planning District Commission
Mr. Edward F. Parcha, Executive Director
P. O. Box 1337
119 West Frederick Street
Staunton, Virginia 24401 (885-5174)

DISTRICT 7

Lord Fairfax Planning District Commission
(not yet staffed)
Send correspondence to:
The Honorable F. Douglas French, Chairman
Maurertown, Virginia 22644

DISTRICT 8

Northern Virginia Planning District Commission
Mr. Bernard Gross, Executive Director
6316 Castle Place
Falls Church, Virginia 22044 (534-2024)

DISTRICT 9

Rappahannock-Rapidan Planning District Commission
(not yet organized)

DISTRICT 10

Thomas Jefferson Planning District Commission
(not yet organized)

DISTRICT 11

Central Virginia Planning District Commission
Mr. Thomas D. Smedley, Executive Director
2901 Langhorne Road
Lynchburg, Virginia 24501 (845-3491)

DISTRICT 12

West Piedmont Planning District Commission
Mr. Walter E. Mather, Executive Director
Beckner Building
Martinsville, Virginia 24112 (638-3987)

DISTRICT 13

Southside Planning District Commission
Mr. Robert W. Baker, Executive Director
101 East Church Street
Lawrenceville, Virginia 23868 (848-3154)

DISTRICT 14

Piedmont Planning District Commission
Mr. Douglas Carr, Executive Director
Municipal Building
Farmville, Virginia 23901 (392-6104)

DISTRICT 15

Richmond Regional Planning District Commission
Mr. Edward G. Councill, III, Executive Director
701 East Franklin Street - Suite 810
Richmond, Virginia 23219 (644-8587)

DISTRICT 16

RADCO Planning District Commission
Mr. J. A. Denton, III, Director
913 Charles Street
Fredericksburg, Virginia 22401 (373-2890)

DISTRICT 17

Northern Neck Planning District Commission
Mr. Charles L. Wiley, Executive Director
Weems, Virginia 22576 (438-4400)

DISTRICT 18

(Not organized)

DISTRICT 19

Crater Planning District Commission
Mr. Charles Turner, Director
Send correspondence to:
The Honorable Arlie G. Andrews, Chairman
Mayor of Petersburg
City Hall
Petersburg, Virginia

DISTRICT 20

Southeastern Virginia Planning District Commission
Mr. Robert F. Foeller, Executive Director
110 West Plume Street
Norfolk, Virginia 23510 (622-5301)

DISTRICT 21

Peninsula Planning District Commission
Mr. Henry M. Cochran, Executive Director
2017 Cunningham Drive - Suite 203
Hampton, Virginia 23366 (838-4238)

DISTRICT 22

Accomack-Northampton Planning District Commission
(not yet staffed)
Send correspondence to:
Mr. John R. Drummond, Chairman
County of Accomack
County Courthouse
Accomac, Virginia 23301

PLANNING DISTRICTS

COMPOSITION AND POPULATION ESTIMATES*

JULY, 1970

<u>DISTRICT</u>	<u>POPULATION</u>
DISTRICT 1	93,144
Lee County	22,917
Scott County	25,686
Wise County	39,468
City of Norton	5,073
Town of Big Stone Gap	(4,599) ¹
DISTRICT 2	126,104
Buchanan County.....	37,603
Dickenson County	18,216
Russell County.....	27,698
Tazewell County.....	42,592
Town of Bluefield.....	(5,498) ¹
Town of Richlands	(5,272) ¹
Town of Tazewell	(4,616) ¹
DISTRICT 3	166,929
Bland County.....	5,788
Carroll County	24,491
Grayson County	16,837
Smyth County	32,166
Washington County.....	41,365
Wythe County.....	22,822
City of Bristol.....	16,796
City of Galax.....	6,664
Town of Abingdon.....	(4,488) ¹
Town of Marion	(8,967) ¹
Town of Wytheville	(6,774) ¹

¹ Town population is included in population total of county in which the town is located.

*SOURCE: University of Virginia, the Bureau of Population and Economic Research, "Estimates of the Population of Virginia Counties and Cities: July 1, 1969," November, 1969.

<u>DISTRICT</u>	<u>POPULATION</u>
DISTRICT 4	114,961
Floyd County	10,290
Giles County	16,938
Montgomery County	45,555
Pulaski County	29,928
City of Radford	12,250
Town of Blacksburg	(10,427) ¹
Town of Christiansburg	(8,029) ¹
Town of Pulaski	(11,286) ¹
DISTRICT 5	237,958
Alleghany County	13,148
Botetourt County	18,167
Craig County	3,390
Roanoke County	62,553
City of Clifton Forge	5,906
City of Covington	10,605
City of Roanoke	99,118
City of Salem	25,071
Town of Vinton	(6,656) ¹
DISTRICT 6	189,579
Augusta County	44,408
Bath County	5,159
Highland County	2,688
Rockbridge County	16,543
Rockingham County	47,441
City of Buena Vista	6,985
City of Harrisonburg	15,432
City of Lexington	8,458
City of Staunton	24,538
City of Waynesboro	17,927
DISTRICT 7	106,611
Clarke County	8,161
Frederick County	28,083
Page County	16,747
Shenandoah County	22,997
Warren County	15,634

(Contd.)

<u>DISTRICT</u>	<u>POPULATION</u>
DISTRICT 15	571, 593
Charles City County	6, 651
Chesterfield County	72, 989 ²
Goochland County	10, 739
Hanover County	37, 055
Henrico County	165, 835
New Kent County	5, 108
Powhatan County	8, 239
City of Richmond	264, 977 ²
DISTRICT 16	77, 875
Caroline County	14, 357
King George County	8, 062
Spotsylvania County	17, 212
Stafford County	23, 256
City of Fredericksburg	14, 988
DISTRICT 17	38, 573
Lancaster County	9, 434
Northumberland County	9, 940
Richmond County	6, 793
Westmoreland County	12, 406
DISTRICT 18	47, 698
Essex County	7, 621
Gloucester County	13, 617
King and Queen County	5, 862
King William County	7, 947
Mathews County	6, 508
Middlesex County	6, 143

2 Adjustments have been made in the Richmond City and Chesterfield County population figures to allow for the January 1, 1970, annexation of 47, 450 (estimate determined by annexation court) Chesterfield County residents by the City of Richmond.

<u>DISTRICT</u>	<u>POPULATION</u>
DISTRICT 19	169,659
Dinwiddie County	25,924
Greensville County	11,747
Prince George County	31,218
Surry County	6,060
Sussex County	12,649
City of Colonial Heights	14,756
City of Emporia	5,377
City of Hopewell	23,770
City of Petersburg	38,158
DISTRICT 20	777,342
Nansemond County	36,502
Isle of Wight County.....	19,102
Southampton County	20,477
City of Chesapeake	87,253
City of Franklin	7,962
City of Norfolk	301,529
City of Portsmouth.....	125,077
City of Suffolk	11,778
City of Virginia Beach	167,662
DISTRICT 21	329,032
James City County	16,780
York County	33,245
City of Hampton	125,011
City of Newport News	142,944
City of Williamsburg	11,052
Town of Poquoson	(5,905) ¹
DISTRICT 22	44,569
Accomack County	28,014
Northhampton County	16,555

APPENDIX G

Generalized Programs and Frequent Special Programs of Virginia Regional Planning Districts

APPENDIX G

Generalized Programs and Frequent Special Programs
of Virginia Regional Planning Districts. Surveyed
by Coastal Zone Research Project, Summer 1970.

TABLE II

Program Number	Function	Program	Public Safety Programs		Analytical Applications
			Operational Activities	Facilities Development Information System	
1	Police	Law Enforcement			Law Enforcement Planning Juvenile Delinquency Planning A-95 Review
2	Police	Traffic Control Safety	TOPICS -- Data Collection		A-95 Review of TOPICS Program
3	Emergency and Special Services		Emergency Information Distribution System		
4	Licence/ Inspection/Code Enforcement		Code Enforcement		Code Evaluation & Coordination
5	Civil Defense Disaster		Civil Defense		Community Shelter Planning
6	Planning and Control		Flood, Natural Disaster Control		Flood Control Planning for TVA

APPENDIX G

II Human Resources

Program Number	Function	Program	Operational Activities	Analytical Applications
7	Education	Facilities accounting and control	Building of Community Colleges	Regional Education, Planning; Community College Planning; A-95 Review
8	Library	Library Planning		Regional Library Planning A-95 Review
9	Welfare	Client Control and Accounting	Child Welfare Juvenile Delinquency	Special Service Planning
10	Welfare	Program Review	Counseling	A-95 Review
11	Health	Client Control and Accounting		Regional Comprehensive Health Planning; Medical Facilities and Library Planning
12	Health	Program Review and Control		Mental Health Planning; A-95 Review
13	Recreation	Recreation Planning		Comprehensive REgional Recreation Planning
14	Sanitation			III Physical, Economic Development
				Solid Waste Planning
				Application and Control

APPENDIX G

Program Number	Function	Program	Operational Activities	Analytical Applications
15	Sanitation	Inspection Control		Air Pollution Planning
16	Parks	Inventory Maintenance		Regional Recreation Planning Historic Presentation Planning A-95 Review
17	Town Planning	Master Planning	Preparation of Regional and Local Plans (701)	Long Range Planning 701 Review
18	Town Planning	Zoning		
19	Town Planning	Subdivision Regulation	Base Mapping Technical Data Centers	Systems Analysis of Planning Program; A-95 Review
20	Economic Development	Commercial Industrial Development	Inventory and Planning Industrial Park Development; Manpower Studies; Small Community Studies VEC	Regional Economic Development Planning; A-95 Review
21	Economic Development	Inventories		Environmental Quality Plans
22	Economic Development	Programs		Environmental Refuse Plans
23	Redevelopment	Neighborhood Classification	Specific Grants for Housing Projects	Planning and Review Regional Housing Studies

APPENDIX G			
Program Number	Function	Program	Operational Activities
24	Redevelopment	Project Control	Mobile Home Planning A-95 Review
25	Engineering	Bond & Bid Control	Continuing Traffic Planning
26	Engineering	Subdivision Control	A-95 Review Airport Planning
27	Engineering	Street Network Control	Mass Transit Planning Topics Planning
28	Transportation	Traffic Planning	Traffic Planning
29	Public Utilities	Water Planning	Regional Water Studies Planning
30	Public Utilities	Sewer Planning	Regional Sewer Planning
			IV Public Finance Program
31	Finance	Fiscal Planning	Specific to Agency Planning
			Regional Capital Investment Planning

APPENDIX H

Summary of Programs Reviewed under B.O.B. Circular A-95

COVERAGE OF PROGRAMS UNDER ATTACHMENT A, PART I

Programs unmarked by an asterisk are covered by section 204 of the Demonstration Cities and Metropolitan Development Act of 1966. Programs marked by an asterisk have been added pursuant to Title IV of the Intergovernmental Cooperation Act of 1968. Not all projects under some programs are covered by these authorities. Therefore, agency program regulations prepared pursuant to this Circular will indicate types of projects which are excluded from coverage. Agencies will consult with the Bureau on any such exclusions.

1. Program coverage by function

a. Open space land

- (1) Department of Housing and Urban Development (HUD) -- Open space program (42 USC 1500-1500e)
- (2) Department of the Interior -- Outdoor recreation (16 USC 4601-4601-11)
- (3) Department of Transportation (DOT) -- Landscaping and scenic enhancement (23 USC 319[b])
- (4) Department of Agriculture (USDA) -- "Greenspan" program (7 USC 1838[i][j])

b. Hospitals

- (1) Department of Health, Education, and Welfare (HEW) -- Hill-Burton hospital and health facilities construction program (42 USC 291-291j)
- (2) HEW -- Health research facilities construction (42 USC 292-292[i] as amended by P. L. 89-115)
- (3) HEW -- Community mental retardation facilities and mental health centers construction (42 USC 291k, 295-295e, 2661-2665, 2671-2677, 2691-2696)
- (4) HEW -- Vocational rehabilitation facilities construction (P. L. 89-333)
- (5) HEW -- Narcotic treatment center construction (P. L. 89-793, Title IV, section 402)

(No. A-95)

(6) Appalachian Regional Commission (ARC) -- Health facilities construction (multi-county demonstrations) (40 USC App 202)

(7) HUD -- Hospital housing and other hospital facility loans (12 USC 1749)

c. Airports

(1) DOT -- Airport planning and construction (49 USC 1101-1120)

d. Libraries

(1) HEW -- Construction of regional medical libraries (42 USC 280b-3)

*(2) HEW -- Library construction (20 USC 16)

e. Water supply and distribution

(1) HUD -- Basic water facilities construction (42 USC 3101-3108)

(2) USDA -- Rural water facilities construction (7 USC 1926[a])

f. Sewerage facilities and waste treatments

(1) ARC -- sewage treatment works construction (40 USC App 212)

(2) HEW -- solid waste disposal facilities construction (P.L. 89-272)

(3) Department of the Interior -- Waste treatment works construction (33 USC 466c-1)

(4) USDA -- Rural water and waste disposal facilities construction (7 USC 1926[a])

(5) HUD -- Basic sewer facilities construction (42 USC 3101-3108)

g. Highways

(1) ARC-- Appalachian development highway system (40 USC App 201)

(2) DOT -- Highway planning, development and construction (23 USC)

h. Other transportation facilities

(1) DOT -- Urban mass transportation facilities construction (49 USC 1601-1604, 1607-1611)

- i. Water development and land conservation
 - (1) ARC -- Mining area restoration (40 USC App 205)
 - (2) Department of Defense-- Beach erosion control and flood prevention
 - (3) Department of the Interior -- Irrigation and reclamation (43 USC 421b, 421c, 422a-k)
 - (4) USDA -- Watershed protection and flood prevention (16 USC 1001-1009; 58 Stat. 887, excluding investigations and surveys under the provisions of 16 USC 1006)
 - (5) USDA -- Loans for soil and water conservation, recreation, and shifts in land use (7 USC 1926a)

- j. Law enforcement facilities

- (1) Department of Justice -- Law enforcement and safe streets program (P.L. 90-351; 82 Stat. 199-200)

- k. Planning

- (1) HUD -- Comprehensive planning assistance (40 USC 461)
 - (2) HUD -- Public works planning advances (40 USC 462)
 - (3) HUD -- Community renewal programs (42 USC 1453[d])
 - (4) DOT -- Urban mass transportation systems planning (49 USC 1601)
 - (5) HEW -- Comprehensive areawise health planning (42 USC 246)
 - (6) HEW -- Air pollution control planning (42 USC 1857c)
 - (7) HEW -- Solid waste disposal planning (42 USC 3255)
 - (8) HEW -- Juvenile delinquency prevention and control planning (P.L. 90-445; 82 Stat. 463)
 - (9) Justice -- Law enforcement and crime control planning (P.L. 90-351; 82 Stat. 198-199)
 - (10) Interior -- River basin pollution control and abatement planning (33 USC 466a)
 - (11) Commerce -- Economic development district planning (42 USC 1351-1352)

(No. A-95)

(12) USDA -- Comprehensive water and waste disposal planning
(42 USC 3304)

*(13) OEO -- Community action planning (42 USC 2781)

1. Miscellaneous

(1) HUD -- Public facility loan program (42 USC 1491-1497)

(2) HUD -- Advance acquisition of land (42 USC 3101-3108)

*(3) HUD -- New communities (P.L. 90-448; 82 Stat. 513)

(4) Department of Commerce -- Public works and development facilities loans and grants (42 USC 3131-3136, 3141-3143)

(5) USDA -- Rural renewal loans (7 USC 1010-1011)

(6) USDA -- Resource conservation and development loans (7 USC 1010-1011 [Supp V])

*(7) HEW -- Teaching facilities for medical, dental and other health personnel (42 USC 293)

*(8) HEW -- Expansion and improvement of nurse training (42 USC 296)

2. Program coverage by agency

a. Department of Housing and Urban Development

(1) Open space program

(2) Basic water and sewer facilities

(3) Public facility loans

(4) Public works planning advances

(5) Comprehensive planning assistance

(6) Advance acquisition of land

*(7) New communities

(8) Hospital housing and other hospital facility loans

*(9) Community renewal programs (CRP)

b. Department of the Interior

(1) Outdoor recreation

(2) Waste treatment facilities

(3) Irrigation and reclamation

(4) River basin pollution control and abatement planning

(No. A-95)

c. Department of Transportation

- (1) Highway planning, Development, and construction
- (2) Highway landscaping and scenic enhancement
- (3) Urban mass transportation facilities
- *(4) Urban mass transportation systems planning
- (5) Airport planning and construction

d. Department of Health, Education, and Welfare

- (1) Hill-Burton hospital and health facilities
- (2) Health research facilities
- (3) Community mental health facilities and centers
- *(4) Teaching facilities for medical, dental, and other health personnel
- *(5) Expansion and improvement of nurse training
- (6) Vocational rehabilitation facilities
- (7) Regional medical libraries construction
- *(8) Library construction
- (9) Solid waste disposal facilities
- *(10) Solid waste disposal planning
- *(11) Air pollution control planning
- (12) Narcotic treatment centers
- *(13) Comprehensive areawide health planning
- *(14) Juvenile delinquency prevention and control planning

e. Department of Agriculture

- (1) "Greenspan" program
- (2) Rural water and waste disposal facilities
- (3) Comprehensive water and sewer planning
- (4) Watershed protection and flood control
- (5) Soil and water conservation loans, recreation, and shifts in land use
- (6) Rural renewal
- (7) Resource conservation and development

f. Department of Commerce

- (1) Public works and economic facilities
- *(2) Economic development district planning

g. Department of Justice

- (1) Law enforcement facilities
- *(2) Law enforcement and crime control planning

(No. A-95)

h. Department of Defense

(1) Beach erosion control and flood prevention

i. Appalachian Regional Commission

(1) Health facilities construction

(2) Sewage treatment works

(3) Appalachian development highway system

(4) Mining area restoration

j. Office of Economic Opportunity

*(1) Community action planning

(No. A-95)

APPENDIX I

Data Items Used by
Virginia Regional Planning District Commissions

APPENDIX I

Data Items Used by Virginia Regional Planning District Programs
Surveyed by Coastal Zone Research Project, Summer 1970
and by Virginia Division of State Planning and Community Affairs, April 1969

Number	Data Item	Current Source	Potential Applications of Remote Sensing by Type of Sensor		
			PHOTOGRAPHY	PROBABLE APPLICABILITY	
			B/W	Color	Color I/R
1.	Population count	Census Bureau of Population			
2.	Population estimate	and Economic Research			
3.	Population age -- year of birth	Transportation Study			
		Special counts			
4.	Family size	Census Health Department			
5.	Race	Census			
6.	Family income	Census			
7.	Marital status	Census			
8.	Occupation	Census Virginia Employment Commission			

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Number	Data Item	Current Source	Potential Applications of Remote Sensing by Type of Sensor			
			PHOTOGRAPHY	PROBABLE APPLICABILITY	B/W Color	Color
		I/R	High	Med.	Low	
9.	Vacancy rates	Local Government				
10.	Rooms per structure	Census				
11.	Presence of standard facilities	Census				
12.	Students by grade	School census				
13.	Types of businesses	Local Directories Census, Virginia Employment Commission				
14.	Employment rates	Virginia Employment Commission				
15.	Number of automobiles	Division of Motor Vehicles	X			X
16.	Traffic counts	Continuing Transportation Study	X			X
17.	Trip origin/destination	Continuing Transportation Study				

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Number	Data Item	Current Source	PHOTOGRAPHY	PROBABLE APPLICABILITY	High Med. Low
			B/W Color	Color	I/R
18.	Migration (in/out)	Bureau of Population & Economic Research			
19.	Birth/death rates	Health Department			
20.	Hospital statistics	Local Hospital			
21.	Police complaints	Local Police			
22.	Police arrests	Local Police			
23.	Business license rates	Local clerks, Revenue Commission			
24.	Number of businesses	Revenue Commission			
25.	Welfare case leads	Local Welfare officials			
26.	Building permits	Local officials			
27.	Building completions	Local officials			
28.	Building demolitions	Local officials			
29.	Building cost estimates	Local officials			

APPENDIX I

Number	Data Item	Current Source	Potential Applications of Remote Sensing by Type of Sensor	PROBABLE APPLICABILITY
			PHOTOGRAPHY B/W Color Color I/R	High Med. Low
30.	Voter registration	Local officials		
31.	Mobile Home taxes	Local officials		
32.	Solid waste disposal	Health Department; Local officials		
33.	Tax structure	Local officials		
34.	Local Budgets	Local officials		
35.	Industrial employment	Census, Chamber of Commerce		
36.	Air quality	State Air Pollution Control Board		
37.	Water meter estimates	Local officials		
38.	Street plans	Local officials		X
39.	Subdivision plats	Local officials		
40.	Topographic maps	U.S.G.S.		X
41.	Utility rates	Local officials		

APPENDIX I

Number	Data Item	Current Source	Potential Applications of Remote Sensing by Type of Sensor		
			PHOTOGRAPHY	PROBABLE APPLICABILITY	
42.	Utility lines	Local officials	B/W Color Color	High Med. Low	I/R
43.	Personal income	Census			
44.	Juvenile crime	Local police			
45.	Special Traffic Facility designs	Local officials			
46.	Local codes, ordinances, and plans	Local officials			
47.	Flood plain characteristics		X	X	X
48.	Recreation resources -- land, water	Local & State Recreation agencies	X	X	X
49.	Climatic data	E.S.S.A.; local weather bureaus			
50.	Location and areas of land use -- residential -- single family	Local officials; Transportation Planning	X		
51.	Location and areas of land use -- residential -- multi-family	Local officials; Transportation Planning	X		X

APPENDIX I

Number	Data Item	Current Source	Potential Applications of Remote Sensing by Type of Sensor				
			PHOTOGRAPHY	B/W Color	Color I/R	PROBABLE APPLICABILITY	High Med. Low
52.	Location and acres of land use -- residential -- group quarters	Local officials; Transportation Planning	X			X	
53.	Location and acres of land use -- commercial	Local officials; Transportation Planning	X			X	
54.	Location and acres of land use -- industrial	Local officials; Transportation Planning	X			X	
55.	Location and acres of land use -- warehousing	Local officials; Transportation Planning	X			X	
56.	Location and acres of land use -- recreation	Local officials; Transportation Planning	X			X	
57.	Location and acres of land use -- civic buildings	Local officials; Transportation Planning	X			X	
58.	Location and acres of land use -- transport right of way	Local officials; Transportation Planning	X			X	
59.	Location and acres of land use -- transport terminals	Local officials; Transportation Planning	X			X	

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Number	Data Item	Current Source	Potential Applications of Remote Sensing by Type of Sensor	
			PHOTOGRAPHY	PROBABLE APPLICABILITY
60.	Location and acres of land use -- parking	Local officials; Transportation Planning	X	High Med. Low
61.	Location and acres of land use -- wholesale	Local officials; Transportation Planning	X	
62.	Location and acres of land use -- contracting	Local officials; Transportation Planning	X	
63.	Location and acres of land use -- utilities	Local officials; Transportation Planning	X	
64.	Location and acres of land use -- farms and woods	Local officials; Transportation Planning	X	
65.	Location and acres of land use -- water areas	Local officials; Transportation Planning	X	
66.	Location and acres of land use -- flood plains	Local officials; Transportation Planning	X	
67.	Location and acres of land use -- extractive	Local officials; Transportation Planning	X	
68.	Transport thoroughfare inventory	Local officials; Transportation Planning	X	
69.	Transit inventory	Local officials; Transportation Planning		

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Number	Data Item	Current Source	Potential Applications of Remote Sensing by Type of Sensor		
			PHOTOGRAPHY	PROBABLE APPLICABILITY	High Med. Low
	B/W Color	Color	I/R		
70.	Traffic Control Systems	Local officials; Transportation Planning			

APPENDIX J

Data Items Used by
Virginia Municipal and County Government

APPENDIX J

DATA ITEMS USED BY VIRGINIA MUNICIPAL AND COUNTY GOVERNMENT

Summarized by Virginia Division of State Planning and Community Affairs

April 1, 1969

I. Generalized Administration

Number	Data Item	Current Source	R/S Potential*					G	Application Low/High
			A	B	C	D	E		
1.	Population: Count	U.S. Bureau of the Census Virginia Employment Commission School Census (Local) Office of Administration (Local)							
2.	Population estimates	U.S. Bureau of the Census Building Inspections Planning Department School Census U. Va. Pop. & Econ. Rsch. Bur.							
3.	Population: Age	U.S. Bureau of the Census School Census (Local) Personnel Office (Local) U. Va. Pop. & Econ. Rsch. Bur. Office of Administration (Local)							

* A=Black and White; B=Color; C=Color I/R; D=Thermal I/R; E=ERTSA; F=Resolution required (in meters); G=Freq.

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Number	Data Item	Current Source	R/S Potential					Est. Application Low/High
			A	B	C	D	E	
4.	Population: Family size	U.S. Bureau of the Census School Census (Local) Personnel Office (Local) Administration Office (Local)						
5.	Population: Race	U.S. Bureau of the Census School Census (Local) Personnel Office (Local)						
6.	Family income	Census, U.S. School Census Personnel Office						
7.	Marital status	Census, U.S. School Census State: Department of Health Office of Administration						
8.	Occupational status	Census, U.S. School Census Personnel Office Office of Administration						
9.	Vacancy rates	Census, U.S. School Census State: Department of Health						
10.	Rooms/Unit	Census, U.S. School Census						

Number	Data Item	Current Source	R/S Potential				Est. Low/High
			A	B	C	D	
11.	Standard facilities	Census, U.S. Building Inspections State: Department of Health					H
12.	Students: by grade	School Census					
13.	Type of business	Census, U.S. Planning Department (Local) Boards of Trade (Local)	X				
14.	Employment rates	Census, U.S. State: Va. Employment Comm. Personnel Department (Local)					X
15.	Number of autos	Census, U.S. State: Highway Department Data Processing (Local) State: Div. Motor Vehicles	X				H
16.	Traffic counts	State: Highways Department School Board Traffic Division (Local)					X
17.	Trip destination	State Highway Department Traffic Division (Local)					
18.	Migration data	State: Highways Department Planning (Local) School Board U. Va. Pop. & Econ. Rsch. Bur.					

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Number	Data Item	Current Source	R/S Potential						Est. Application Low/High
			A	B	C	D	E	F	
19.	Birth/Death rates	Planning (Local) State: Department of Health							
20.	Hospital statistics	State: Department of Health							
21.	Police: Complaints	Police Department (Local)							
22.	Police: Arrests	Police Department (Local)							
23.	Business license rates	Commission of Revenue (Local) Office of Administration (Local)							
24.	Welfare caseloads	State: Department of Welfare							
25.	Building permits	Building Inspections Public Works (Local)							
26.	Building completions	Building Inspections Public Works (Local)							
27.	Building demolitions	Building Inspections Public Works (Local)							X
28.	Building cost estimates	Building Inspections Public Works (Local)							
29.	Voter registration	Data Processing (Local) Registrar (Local)							

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APPENDIX J

Number	Data Item	Current Source	R/S Potential						Est. Application Low/High
			A	B	C	D	E	F	
30.	Mobile home taxation	Data Processing (Local) Registrar (Local)	X						H
31.	Solid waste disposal	Public Works (Local) Administration (Local)							
32.	Land use	Planning (Local) Administration (Local)		X					H
33.	Tax structure	Administration (Local)							
34.	Personnel data	Boards of trade (Local) Personnel Department (Local) Administration (Local)							
35.	Personnel benefits	Personnel Department (Local) Administration (Local)							

III. PLANNING DEPARTMENT DATA

1. Population: Complete Count Census, U. S.
2. Population: Estimates Planning (Local)
U. Va. Pop. & Econ. Rsch. Bur.

APPENDIX J

Number	Data Item	Current Source	R/S Potential					Est. Application Low/High
			A	B	C	D	E	
3.	Population: Age	Census, U.S. Planning (Local) U. Va. Pop. & Econ. Rsch. Bur.						
4.	Population: Family size	Census, U.S.						
5.	Population: Race	Census, U.S.						
6.	Population: Family income	Census, U.S. Planning (Local)						
7.	Marital status	Census, U.S. State: Department of Health						
8.	Occupational status	Census, U.S. Planning (Local)						
9.	Vacancy rates	Census, U.S. Planning (Local)						
10.	Rooms/Units	Census, U.S.						
11.	Standard facilities	Census, U.S. Building Inspections						
12.	Students: by grade	School Census						

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Number	Data Item	Current Source	R/S Potential						Est. Application Low/High
			A	B	C	D	E	F	
13.	Type of business	Census, U.S. Planning (Local) School Census Board of Trade (Local)							
14.	Employment rates	Census, U.S. State: Va. Employ. Comm. School Census State: Div. of Motor Vehicles							
15.	Number of Autos	State: Va. Employ. Comm. State: Highways Planning (Local) State: Div. of Motor Vehicles	X						H
16.	Traffic counts	State: Highways Traffic Div. (Local) State: Department of Health Public Works (Local)							
17.	Origin -- destination	Census, U.S. State: Highways Traffic (Local) Public Works (Local)							
18.	Migration	Census, U.S. U. Va. Pop. & Econ. Rsch. Bur.							

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Number	Data Item	Current Source	R/S Potential					Est. Application Low/High
			A	B	C	D	E	
19.	Birth/death rates	State: Department of Health U. Va. Pop. & Econ. Rsch. Bur.						
20.	Hospital statistics	State: Department of Health						
21.	Police: Complaints	Police Department (Local)						
22.	Police: Arrests	Police Department (Local)						
23.	Business license rates	Planning (Local) Police (Local)						
24.	Number of business establishments	Census, U.S. State: Department of Welfare Data Processing (Local) Planning (Local)						
25.	Welfare caseloads	Census, U.S. State: Welfare						
26.	Building permits	Building Inspections Planning (Local)						
27.	Building completions	Building Inspections Planning (Local) Public Works (Local)						
28.	Building demolitions	Building Inspections Public Works (Local)						

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Number	Data Item	Current Source	R/S Potential				Est. Application Low/High
			A	B	C	D	
29.	Building Cost estimates	Building Inspections Public Works (Local)					
30.	Voter registration	Building Inspections Registrar (Local)					
31.	Mobile home registration	State: Department of Health Public Works (Local)	X				H
32.	Land use	Data Processing (Local) Planning (Local) Police (Local)					
33.	Tax structure	Administration(Local)					
34.	Persons per room	Planning (Local)					
35.	Personnel benefits	Personnel (Local)					
36.	Code enforcement	Planning (Local) State: Department of Health					
37.	Library usage	Library	X				
38.	Existing land uses	Planning (Local)	X				
39.	Year buildings built	Census, U.S.					
40.	Accidents	Police (Local)					

APPENDIX J

Number	Data Item	Current Source	R/S Potential						Est. Application Low/High
			A	B	C	D	E	F	
41.	Structural conditions	Planning (Local) Public Works (Local)							
42.	Military service	Planning (Local)							
43.		Data Processing (Local)							
44.	Miscellaneous	Planning (Local)							

III. OTHER PROGRAMS:
Education, Police, Finance -- Categories and
Sources not Included in the Above

1. Building vacancy data Building Inspections State: Game and Fish X
2. Auto ownership State: Div. of Motor Vehicles
3. Boat ownership Building Inspections Planning (Local)
4. Zoning -- land use information Police (Local)
5. Safety activities Police (Local)
6. Type and number of crimes Police (Local)

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Number	Data Item	Current Source	Est.						Application Low/High
			A	B	C	D	E	F	
7.	Property taken and Value	Police (Local)							
8.	Warrants (Number of)	Police (Local)							

APPENDIX K

Composite Program Structure of Virginia Counties and Municipalities

APPENDIX K

Composite Program Structure of
Virginia Counties and Municipalities

<u>Function</u>	<u>Program</u>	<u>Operational Applications</u>	<u>Analytic Applications</u>
I. General Government	A. Legislative	Program implementation monitoring	Policy development
	B. Executive	Program development; program implementation monitoring; expenditure and program forecasting	Policy development
	C. Elections	Voter registration; voter records; voter statistics Election reporting -- vote tally	Registrant analysis Election trend analysis
	D. General Services	Personnel records; salary records; purchasing records; retirement system records; tax withholding records; procurement scheduling	Management studies; labor analysis; actuarial analysis; manpower forecasts

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<u>Function</u>	<u>Program</u>	<u>Operational Applications</u>	<u>Analytic Applications</u>
II. Administration of Justice	A. Judicial	Court dockets; back logs; defendant backgrounds; case scheduling; manpower scheduling	Workload analysis; policy analysis
	B. Custodial and Supervisory	Probationer records; manpower allocations; facility usage; facility staffing	Policy analysis; facilities planning; manpower planning
	C. Investigative (Prosecutor)	Suspect background	
	A. Taxation	Real and personal property appraisals; tax assessments; sales surveys; vehicle taxation records	Home value and rental analysis; sales assessment ratio analysis
	B. Accounting	General ledger and fund accounting; budgetary & appropriation accounting; cost accounting; accounts payable	Equipment replacement scheduling
	C. Audit	Expenditure pre-audit; post-audit; fixed asset accounting	
III. Public Finance			

APPENDIX K

<u>Function</u>	<u>Program</u>	<u>Operational Applications</u>	<u>Analytic Applications</u>
III. Public Finance (continued)	D. Revenue Collection	Revenue forecasting; tax bill issuance; collection of all fees, taxes, and fines; control of delinquent accounts	Delinquency analysis and trending; revenue yield analysis
	E. Treasury	Accounts payable; treasury accounting; investment registers; debt accounting	Cash flow analysis; investment planning and programming
IV. Public Safety	A. Police -- Law Enforcement	Crime reporting and statistics; criminal histories and identification records; stolen property and vehicle listings; arrest reporting and recording; missing person reporting; arrest and booking control; manpower scheduling	Crime analysis; arrest analysis; manpower allocations
	B. Fire	Inspection scheduling and reporting; special permit issuance; building status; hydrant locations; fire incident statistics; equipment maintenance records; cost accounting	Fire analysis by location, type of building, etc.

APPENDIX K

<u>Function</u>	<u>Program</u>	<u>Operational Applications</u>	<u>Analytic Applications</u>
IV. Public Safety (continued)	C. License Inspection -- Code Enforcement	Inspection scheduling and reporting; compliance monitoring; license issuance and renewal	Violation analysis by location and owner
	D. Civil Defense	Resource inventory; resource allocation and status monitoring of emergency facilities	Disaster preparedness; simulation training
V. Human Resource Development	A. Recreation	Registration and participant accounting; activity scheduling; facility scheduling	Program evaluation and design; facility use analysis
	B. Education	School census; report preparation; attendance accounting; student records; class and facility scheduling; student performance, teacher records	Curriculum evaluation; facility usage surveys; bus scheduling
C. Welfare		Eligibility certification; benefit calculation and payment; family unit data; medical care reporting; state and federal reporting; work programming	Case analysis and reporting; caseload analysis

APPENDIX K

<u>Function</u>	<u>Program</u>	<u>Operational Applications</u>	<u>Analytic Applications</u>
V. Human Resource Development (continued)	D. Health	Program statistics; caseload statistics and reporting; health care scheduling; inoculation records and scheduling; disease statistics	Community health analysis; program analysis and monitoring
	E. Libraries	Book control; circulation records; processing and purchasing control	Circulation analysis; material usage analysis
	F. Employment Services	Summer youth employment; continuing administrative employment	Projecting administrative employment needs
	G. Vital Statistics	Recording and reporting births, deaths, and marriages	Trend analysis
	H. Special Programs	Specific to each jurisdiction	Developing and justifying special programs
VI.	A. Engineering Physical and Economic Development	Bond and bid control; subdivision controls; road and street inventories; special studies; design studies	Traffic analysis; stream flow analysis

APPENDIX K

<u>Function</u>	<u>Program</u>	<u>Operational Applications</u>	<u>Analytic Applications</u>
VI. Physical and Economic Development (continued)	B. Transportation	Street maintenance control; condition and use listings; project scheduling; equipment allocation	Work analysis and projection; route lay-outs; network analysis
C. Public Utilities		Construction; accounting; distribution and flow monitoring; billing	Consumption audit; new facility planning
D. Parks		Scheduling of maintenance and improvements; property inventory; facility usage	Manpower allocation; facility usage; projection of usage and needs
E. Town Planning		Land use inventory; development monitoring; capital improvement control; location and geographic indexing	Capital improvement planning; population projections; land use analysis; public facility location
F. Land Records		Land record indexing; abstracting; locator files	Title searching
G. Redevelopment		Standard/substandard housing surveys; neighborhood environment surveys; project scheduling and control	Neighborhood deterioration analysis

APPENDIX K

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<u>Function</u>	<u>Program</u>	<u>Operational Applications</u>	<u>Analytic Applications</u>
VI. Physical and Economic Development (continued)	H. Refuse Collection and Sanitation	Collection records; disposal records; inspection scheduling; manpower and equipment allocation	Disposal area projections; management studies
	I. Economic Development	Commercial and industrial inventories; business indices	Economic forecasts